JPRS 75073

5 February 1980

USSR Report

AGRICULTURE

No. 1216

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available from Bell & Howell, Old Mansfield Road, Wooster, Ohio 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

50272-101

REPORT DOCUMENTATION PAGE

1. REPORT NO. JPRS 75073

2.

3. Recipient's Accession No.

4. Title and Subtitle

USSR REPORT: AGRICULTURE, No. 1216

5. Report Date

5 February 1980

6.

7. Author(s)

8. Performing Organization Rept. No.

9. Performing Organization Name and Address

Joint Publications Research Service
1000 North Glebe Road
Arlington, Virginia 22201

10. Project/Task/Work Unit No.

11. Contract(C) or Grant(G) No.

(C)

(G)

12. Sponsoring Organization Name and Address

As above

13. Type of Report & Period Covered

14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

This serial report contains information on trends and policy at the national and republic levels, plans and plan fulfillment, production statistics, technological achievements and shortcomings, and agricultural investments, administration, and management. Information at lower levels is included when it is indicative of trends or innovations.

17. Document Analysis a. Descriptors

USSR
Agriculture

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group 2D, 2B

18. Availability Statement

Unlimited Availability
Sold by NTIS
Springfield, Virginia 22161

19. Security Class (This Report)

UNCLASSIFIED

20. Security Class (This Page)

UNCLASSIFIED

21. No. of Pages

90

22. Price

(See ANSI-Z39.18)

See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

JPRS 75073

5 February 1980

USSR REPORT

AGRICULTURE

No. 1216

CONTENTS

PAGE

Improvements in Agricultural Production Discussed
(A. Kosynkin; EKONOMIKA SEL'SKOGO KHOZYAYSTVA, Dec 79) 1

Advantages of Mixed Feed Discussed
(S. Burtsev; EKONOMIKA SEL'SKOGO KHOZYAYSTVA, Dec 79) 13

Need To Develop Enterprise Subsidiary Farms
(Editorial; TRUD, 14 Dec 79) 16

Private Plot Farms Must Be Given Public Aid
(M. Mamayev; SOVETSKAYA TORGOVLYA, 23 Oct 79) 19

Method of Evaluating Farm Operations Discussed
(I. Vil'tsin, A. Leyerte; EKONOMICHESKAYA GAZETA, Sep 79) ... 23

Problems in Grain Storage Discussed
(EKONOMICHESKAYA GAZETA, Dec 79) 26

Cost Accounting in Stockraising
(A. M. Chursin; ZHIVOTNOVODSTVO, Nov 79) 28

Creation of Highly Productive Meat Cattle Herd
(B. A. Bagriy; VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI, Sep 79). 34

Methods for Increasing the Output of Livestock Products
(A. Yakushev; PLANOVOYE KHOZYAYSTVO, Nov 79) 53

Dnepropetrovskaya Oblast Prepares for Winter Maintenance of Livestock
(Editorial Report) 60

Concern for Abundance of Livestock Feed in the Ukraine
(Editorial Report) 61

CONTENTS (Continued) Page

Belorussian Newspaper Addresses Feed Quality Problems
(Editorial Report) 63

Ukrainian Newspaper Expresses Anxiety for Feed Quality
(Editorial Report) 64

Newspapers in Belorussia Criticize Poor Work of Livestockmen
(Editorial Report) 65

Increased Rye Sowings in RSFSR
(SEL'SKAYA ZHIZN', 9 Aug 79) 69

Soybeans Planted in Volgogradskaya Oblast for First Time
(F. Kozlovtsev; IZVESTIYA, 29 Dec 79) 70

Fall Sowing Lags in Armenia
(KOMMUNIST, 21 Oct 79) 71

Development of Rice Crop in Kara-Kalpak ASSR
(D. Plavanov; SEL'SKOYE KHOZYAYSTVO UZBEKISTANA, Oct 79) . 72

Protein Concentrate Derived From Grass
(Yu. Novikov; SEL'SKAYA ZHIZN', 15 Dec 79) 77

Feed-Crop Choices for Irrigated Land
(M. Khudenko, N. Krysina; SEL'SKOYE KHOZYAYSTVO ROSSII, Nov 79) 81

Central Asian Journal Urges Organized, Efficient Local Feedcrop Effort
(Editorial Report) 87

Briefs
- Use of Local Feed 88
- Careful Feed Use in Volgogradskaya 88
- Saxaul to Upgrade Pastures 88

IMPROVEMENTS IN AGRICULTURAL PRODUCTION DISCUSSED

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 12, Dec 79 pp 3-10

[Article by A. Kosynkin, "On Improving Production"]

[Text] In an unswerving effort to improve the material and cultural well-being of the Soviet people, the CPSU Central Committee and the USSR Council of Ministers are doing everything possible to ensure the dynamic growth of agriculture, whose level and rate of development greatly affects the evenness of development of other economic sectors.

In implementing the agrarian policy of the party, the Soviet people over the last three years of the five-year plan have accomplished enormous feats in strengthening the physical production base of the nation's agroindustrial complex. After the March (1965) Plenum of the CPSU Central Committee capital investment to strengthen the physical production base for the Eighth, Ninth, and Tenth Five-Year Plans totaled 467 billion rubles—3.3 times greater than in all preceding years of Soviet power.

In the production of tractors, grain combines, fertilizers, and volume of rural construction the Soviet Union ranks first in the world. In the last few years the capacity of industries, which provide farms the means of production, increased substantially; the productive capacity of agriculture rose sharply, and the production resources of the industries which transport, process, store and market the products derived from raw agricultural produce grew and were perfected.

Thanks to the efforts of the party and the people a firm foundation has been laid for increasing the production of all types of agricultural and livestock products, for bolstering the nation's supply of foodstuffs and raw materials.

The average annual agricultural output between 1976 and 1978 totaled 124.4 billion rubles in comparison with the 82.8 billion ruble average for the five-year plan preceding the March (1965) Plenum of the CPSU Central Committee—an increase of 150 percent. This was achieved primarily through an increase in agricultural efficiency and field and farm productivity. For the periods under comparison the average annual yield of grain increased from 10.2 to 17 centners per hectare (cwt/ha); cotton—20.6 to 28.5 cwt/ha; sugar beet roots—165 to 254; potatoes—94 to 120, and vegetables—116 to 153 cwt/ha. While in 1965 the yield of corn, cultivated for silage, totaled 88 cwt/ha, in 1978 it was 147 cwt/ha; leguminous fodder—153 and 244, respectively; perennial grass hay—17 and 21, and annual grasses—11 and 17 cwt/ha. The average annual yield of milk per cow in kolkhozes and sovkhozes during this period grew from 390 kg to 2,392 kg; and wool sheared per sheep totaled 3.3 kg; eggs per hen—202. The average weight per head of cattle, sold to the government, totaled 364 kg—an increase of 111 kg; the average weight of hogs increased by 20 kg, totaling 105 kg.

The quality of grain, vegetables, fruit and livestock products improved dramatically.

The increase in total output per unit of cultivated land is a clear indicator of the dynamic growth of agricultural productivity. During the Seventh Five-Year Plan 100 hectares of farmland yielded annually 18,400 rubles worth of produce, while during the past few years of the current five-year plan the yield was 22,600 rubles. The entire increase in total output of agricultural products is due solely to an increase in labor productivity.

At a time when the kolkhozes and sovkhozes, agricultural and water resource management organs are reviewing the current year, developing plans for 1980 and setting production and social goals for the Eleventh Five-Year Plan, a comprehensive analysis must be undertaken of the reserves for additional increases in the output of agricultural and livestock products, and on this basis outline specific ways to increase the efficiency of all sectors.

Of course, the amount of capital investment and how it is used will greatly affect the rate of expanded reproduction in agriculture.

In 1979 capital investments for agricultural development totaled 35.7 billion rubles, and will increase somewhat in 1980. The amount of investments will be increased also in the Eleventh Five-Year Plan. "Their share," as the resolution of the July (1978) Plenum of the CPSU Central

Committee states, "of total funds, earmarked for national economic development, must not be lower than the present level." In providing an ever increasing amount of financial, material, and technical assistance to the development of the agricultural sector of the economy, the CPSU Central Committee and the Soviet government direct the attention of agricultural laborers to the necessity of more efficient utilization of capital investments.

In the past few years shortcomings in planning capital investments have occurred in a number of areas.

The construction of production facilities has outpaced the construction of living quarters, cultural, domestic and transportation facilities.

In irrigation preference has been given to large-scale water management projects, while, as a result, the agricultural assimilation of newly irrigated and reclaimed land lags behind.

At many farms priority is given to the construction of livestock facilities and other buildings to maintain cattle and fowl, and very little is spent on developing a feed base. One can hardly consider it normal to provide a herd with 85-95 percent of its shelter, and only 25-35 percent of the required facilities for storing feed. The lag in development of a feed base, the loss of feed, and a lowering of feed quality in a number of instances will negate the effectiveness of capital investment in the construction and mechanization of livestock facilities.

The most effective investments have been in the development of agricultural sciences, the creation and consolidation of breeding centers, of pedigreed stock and seed growing farms—the main enterprises and institutions on which scientific and technical progress in a given sector depend.

Omissions in planning and surpluses still occur, local conditions are given little consideration. Heavy construction methods are often used in rural construction, which increases the consumption of materials and the cost of agricultural buildings and facilities. Meanwhile local construction materials (brick, quarrystone, wood, and many others) at rural construction sites are meagerly utilized, although they are cheaper and incur less cost in shipment. Light construction must be more widely used in rural construction.

Rural construction organizations have a poor production base. In many rayons capital investments are dissipated; the amount of unfinished construction and uninstalled equipment is growing. In some places there is no effort to combine new construction with the renovation of production facilities already at kolkhozes and sovkhozes. All these are enormous reserves for increasing production efficiency. The experience of the farms of Rostovskaya, Orenburgskaya, Leningradskaya, Grodenskaya oblasts, and Lithuania SSR attest to the reality of using these opportunities.

It is quite important for the government to increase the return from the production funds already committed to agriculture—211 billion rubles worth. Today kolkhozes and sovkhozes are building facilities to house almost 300 million head of cattle, tens of thousands of repair shops, a significant number of storage facilities for agricultural products, 2,515,000 tractors, 700,000 grain harvesters, 1,522,000 trucks, a fleet of other agricultural machinery, numbering several million trailed, mounted, and self-propelled machines and apparatus. Agriculture has a capacity of 552 million horsepower.

Comrade L. I. Brezhnev at the July (1978) Plenum of the CPSU Central Committee spoke of the enormous work done to bolster the physical production base of the village; of the necessity of increasing the demand for anything that will make skillful and effective use of existing production resources in kolkhozes and sovkhozes. "Today this is the foremost task of the rural party organizations, of all agricultural workers," L. I. Brezhnev emphasized.

One can cite many examples of prudent and highly productive use of production capacities and machinery. These are primarily the remarkable initiatives of the machinery maintenance engineers of Ipatovskiy Rayon, Stavropol'skiy Kray and the drivers of Saratovskaya Oblast, the numerous domestic machines on the farms of Altayskiy Kray and Kustanayskaya Oblast, the interkolkhoz machinery maintenance associations of Moldaviya, the livestock complexes, poultry factories, and hothouse combines in the Moscow region.

The effort to increase the productivity of each meter of productive space, of each machine and other means of production must be systematically carried out in all kolkhozes and sovkhozes, sections, farms, and brigades. In this respect special attention must be given to utilizing irrigated and reclaimed land. The government spends significant funds each year on land reclamation. However, a harvest on irrigated land in a number of areas has little to distinguish it from a harvest on unirrigated land. The reasons for this are violation of irrigated farming methods, use of low yield crops, application of insufficient amounts of fertilizer.

A critical agricultural goal is increased grain production from all possible sources. Many years of research of the scientific institutes of the Northern Caucasus, in the Volga basin, in the Urals, Siberia, the southern Ukraine and Kazakhstan, as well as the experience of advanced farms demonstrate significant reserves for further increasing grain production and improving its quality, and, what is really important, opportunities to improve the efficiency of grain cultivation and farming in general.

The experience of the past several years shows that new, high yield strains of winter wheat of the Mironov, Krasnodar, Rostov, and Odessa varieties yield as much as 45-60 cwt/ha on many kolkhoz and sovkhoz fields. However, given insufficient moisture these varieties yield less than the varieties they must replace. The greatest potential of the new strains is realized when they are cultivated in an environment of high level agricultural technology. and, above all, on clean and well fertilized fallow.

At the Rozovsk experimental station of Zaporozhskaya Oblast, located in the arid steppe of the Ukrainian south, winter wheat yield on clean fallow totaled 35.7 cwt/ha on the average over 19 years, while on other soils it was only 18.4 cwt/ha. Thanks to the expansion of clean fallow, grain production of the farms of the Zernograd Rayon, Rostovskaya Oblast, has increased. Particularly striking in this regard is the experiment of the sovkhoz "Gigant", which, under conditions of the severe drought of 1979, harvested 35.2 cwt of grain per hectare. In Stavropol'skiy Kray at the Prikumsk Experimental Station industrial sowing of winter wheat on clean fallow on the average over 15 years yielded 29.2 cwt/ha, after others crops—15.1 cwt/ha. In the 50 years of the station's existence not one hectare of winter wheat has been lost when sown on clean fallow. At the same time in Stavropol'skiy Kray for the past 10 years 242,000 hectares on the average of winter wheat have been lost each year. The main reason is the sowing on previously cultivated land.

The experimental demonstration farm "Novoural'skoye" of the Siberian Agricultural Scientific Research Institute has 35,000 hectares of plowed land in the steppe zone of Omskaya Oblast. In the Seventh Five-Year Plan the clean fallow here accounted for 3.2 percent of the cultivated land, while the average grain yield totaled 5.9 cwt/ha. In the Ninth Five-Year Plan, when the area of clean fallow totaled 17.4 percent of cultivated land, the yield increased to 17.2 cwt/ha. Between 1976-1978 grain yield on the farm exceeded 20 cwt/ha. The kolkhoz "Zarya Altaya" of Zav'yalovskiy Rayon is located on the Kulundinsk Steppe. Thanks to crop rotation here with 15 percent clean fallow the following increases in grain yield were achieved—during the Seventh Five-Year Plan—9.4 cwt per hectare; during the Eighth Five-Year Plan—11.2; Ninth—18.2, and between 1976-1978—22.8 cwt/ha.

The agricultural technology basis of grain cultivation in the arid regions of the country, apparently, must consist of crop rotation, a key element of which is clean fallow, which permits the most productive use of deposits, the accumulation of nitrates, successful weed control, and, most importantly, large and stable harvests of high yield varieties of winter and spring wheat. The introduction in these regions of clean fallow in the crop rotation of fields makes it possible to use manure more effectively; to eliminate the loss of winter wheat.

As a moisture gatherer clean fallow is equivalent to well irrigated land and in the steppes is a reliable way to deal with drought. In arid regions clean fallow strongly influences not only the type of harvest of the first crop, but the second and third as well. In particular, clean fallow ensures a larger yield and improves the quality of sugar beets and sunflowers.

In order to increase total grain production, the area of land devoted to those crops, which under certain conditions offer maximum output per hectare sown, must be expanded. Above all, winter wheat sowing has to be increased. The system of preparing the soil also needs to be perfected. Where it will help, soil conservation should be more widely used.

With the cultivation of new strains and hybrids of high yield grains it is important to apply full doses of fertilizer for winter wheat and corn. The application of a complete dose of fertilizers increases yield 3-5-fold as compared to harvests, obtained with an application of 2-3 cwt of fertilizer per hectare. It is economically more advantageous to apply the full amount of fertilizer, but on less area.

In the past few years kolkhozes and sovkhozes have done much to increase production of livestock products. Along with the introduction of new capacities, the supply of equipment for farms and feed production has grown; the allocation of grain for fodder has increased significantly. The farms now boast 114 million head of cattle, 149 million sheep and goats, 75 million pigs and 953 million fowl. Never before has there been such numbers of cattle and fowl in our country. However, animal husbandry continues to experience shortages in feed, although for feed production approximately 130 million hectares of land are used, and 350 million hectares are used for hay fields and pasture.

The composition of feed production must be defined by the specific soil and climatic conditions of the region and farm and those feeds must be grown which will maximize the quantity of feed and protein per hectare. Correspondingly, methods of feeding livestock and of producing meat must be perfected.

In the last few years "Zavety Lenina" and "Krasnaya Zarya" dairy farms of Stupinskiy Rayon, Moskovskaya Oblast, have drastically increased their crops of corn for silage and perennial grasses for hay. These farms prepare for each cow 11-12 tons of high quality silage, making it out of corn stalks and milky-yellow ripe corn cobs. At "Zavety Lenina" the average output of feed per cultivated hectare between 1976-1978 was in grains—30.5 centners, in leguminous crops—48.5 centners, in corn for silage—73.6, in perennial grasses for hay—34.2. The cost of one centner of feed does not exceed 5.56 rubles for grains; 8.91 rubles for leguminous crops; 4.02 rubles for corn silage; 4.87 rubles for perennial grass hay. Just between 1976-1978 this farm increased the yield of milk per cow from 3467 to 3950 kg.

The sovkhozes and kolkhozes of metropolitan Moscow, and the agricultural organs have set themselves the goal of significantly increasing production of roughage, succulent, and grazing feed in the Eleventh Five-Year Plan, in order to achieve a 20 percent reduction in concentrates per centner of milk and per centner of weight gain in cattle.

The meat and dairy sovkhoz "Nazarovskiy" of Kranoyarskiy Kray (44,000 hectares of land, including 31,000 hectares of pasture, 8,000 head of cattle, and 15,000 pigs) in the last few years has radically altered the composition of its feed production. Formerly, preference was given to cultivating corn for silage, which received the bulk of organic and mineral fertilizers. But this crop, because of low temperatures and insufficient moisture, did not produce steady high yields, while the quality of silage was low since 85 percent or more was water. One hectare of corn produced on the average 8.1 centners of feed.

The annual grasses used for hay at the "Nazarovskiy" sovkhoz yielded 6.2 centners of feed per hectare. However, when the harvest fell during a rainy period, the quality of feed dropped.

Beginning in 1971 in order to reduce the cultivation of annual grasses and corn at the sovkhoz, they began to cultivate feed grains and to harvest them in stages of maturation with 50-55 percent water. The crushed mash was placed in coated trenches. This made it possible to increase average output of feed per cultivated hectare over the past 5 years to 23 centners, almost 3 times greater than with feed corn, and 4 times greater than with the cultivation of annual grasses for hay.

Such a change in feed production made it possible to prepare the feed in the first half of August, that is 10-20 days sooner than the period for harvesting corn and wheat. At the farm the hay crops became good predecessors of the grain crops because the land was freed sooner for autumn plowing and fertilizing. Cereal grains, planted after hay, yielded 22 cwt/ha, that is no less than after cultivation of corn and annual grasses.

The cultivation of cereal grains at "Nazarovskiy" sovkhoz not only was not curtailed, but, on the contrary, increased somewhat—from an average of 18,900 hectares between 1966-1970 to 19,400 hectares between 1976-1978. The average annual production of grain increased correspondingly from 29,700 to 38,700 tons. Whereas in 1970 the farm fed the cattle 5,300 tons of hay, in 1978 it fed them only 2,400 tons, and silage—24,300 and 11,400 tons, respectively. In 1970 grain fodder was not produced, while in 1978 17,300 tons were processed, stored, and fed to the livestock.

Average annual production of meat increased from 1,600 tons between 1966-1970 to 2,900 tons between 1976-1978; milk—from 5,200 tons to 7,200 tons, respectively.

The average cost per feed unit of feed grain over the past eight years has been 3 kopecks; for cereal grain—4.5 kopecks, for annual grass hay—5.7, corn silage—12, and leguminous feed—12.5 kopecks.

Since 1974 the farm has devoted an area for fattening calves, where the chief feed is grain fodder. On the average for the past five years the average daily increase in weight of cattle has been 903 grams, while the consumption of feed per centner of weight gain has been 7.3 centners. The average weight per head of cattle, realized by the state, exceeded 500 kg. The yield of milk per cow in 1978 totaled 3,204 kg.

The "Nazarovskiy" sovkhoz reduced the cost of producing a centner of milk and increasing the weight of cattle. This was a crucial condition for achieving high profitability, and increased milk and beef production (in 1978 78 percent and 196 percent, respectively).

A number of rayons lack high quality roughage, succulent, and grazing fodder. They have begun to compensate the shortage and low quality of these feeds in many kolkhozes and sovkhozes with feed grains, which is very disadvantageous to the state. In 1978 livestock were fed 140 million tons of concentrated feed in comparison with an average of 60 million tons during the Seventh Five-Year Plan, that is the consumption of concentrates increased 2.3-fold, while the use of roughage increased by only 40 percent, succulent fodder by 44 percent, and forage by 8 percent.

In nutritive value, yield, and technological effectiveness of producing meat, concentrates are by far the most effective type of feed. The majority of technologies of industrial production of livestock products is based on their wide use. Therefore, today the nation is making every effort to increase without interruption the production of grain for cattle feed. This is the general policy of the party for the near future.

However, considering the specific soil and climatic conditions of many regions of the country and the still significant differences in overall grain harvests from year to year, as well as the real opportunities for further development of grain cultivation, care must be given to the approach used to select the methods of feeding livestock and the makeup of the sectors of animal husbandry, so that existing reserves on the farms for increasing production of roughage, succulent feed, and forage may be greater utilized.

As the experience of advanced farms shows, a powerful feed industry, consisting of highly productive pastures and hay making; well organized production of high quality hay, haylage, and silage; and networks of feed plants must be created for dairy cows, for the raising and feeding of cattle and sheep. To solve this pressing problem it is important to concentrate the efforts of science, to make greater use not only of the potentialities of agricultural enterprises, but also of the chemical, combined feed, and biological industries.

In national economic importance the goal of increasing the production and improving the quality of feeds becomes a vital strategic objective. Today feeds are no less important than grain, cotton, sugar beets. The time has come to treat the fodder, the pasture and the hay harvest as important as the planting of wheat, cotton, and beets.

The planning and stimulation of feed production must be closely tied in with the utilization of capital investments allocated to the farm, of technology, of mineral fertilizers, and other material, technical, and financial means. The economic levers must be used more to increase the material and moral responsibility of each worker and brigade supervisor, of sections, farms, and rayons for increasing the production and improving the quality of feeds. Farms, associations, and rayons must be encouraged in everyway to ensure the growth of production in livestock production by the development of their own feed base with a minimal consumption of concentrated feeds per centner of production.

According to scientists and livestock specialists of many farms, in the past few years the diets of cattle have been lacking in carbohydrates. This is due to a number of circumstances, including a drop in the production of leguminous feed. In the next 2-3 years this must be substantially corrected since a lack of carbohydrates in the diet, as well as protein, will adversely affect the level of productivity of the animals and result in excessive consumption of feeds.

Under these circumstances some regions of the country ought to adhere to more efficient consumption of grain fodder in managing the production of pork. For example, several years ago on many farms of Belorussia, the Baltic, RSFSR the potatoe was one of the main types of feeds used for raising pigs.

Of course, the cultivation of the potatoe is even more labor intensive, and presents storage problems. But in terms of feed unit output per hectare in a number of regions of the country the potatoe ranks first among feed crops, including even feed grains.

In general, the problem of a shortage in feed, a lack of protein and carbohydrates must be solved primarily by more efficient use of each hectare of land on the kolkhozes and sovkhozes in plant cultivation.

The July (1978) Plenum of the CPSU Central Committee worked out a broad program for strengthening the feed base, for bolstering supplys of materials and equipment for eed production. This program clearly defines the tasks of appropriate central, republic, and oblast organizations, kolkhozes and sovkhozes. All measures must be taken to overfulfill the quotas in feed production outlined in the plan.

Comrade L. I. Brezhnev, in a speech in Minsk in 1978, said: "The most important task given by the party is to increase production efficiency. In this connection the strengthening of the economic system, of the economic operation of all sectors and, above all, strict, unswerving observance of planning discipline have special meaning." It is here that the economists and specialists of the kolkhozes and sovkhozes of Krasnodarskiy Kray and Cherkasskaya Oblast will concentrate their efforts, carrying out the enormous work of increasing the profitability of agricultural production.

Reality and enlarged scales of production present new and greater demands to each farm worker. And one of the chief demands of the day is the strengthening of discipline and heightening of responsibility. Today this does not mean simply arriving at work on time, or observing the normal work routine on the farm, in the brigade. Never will that person do his utmost, who does not broaden his knowledge, search for new, effective economic solutions; who does not watch expenses by the minute; who is disorganized, apathetic about the interest of the collective undertaking. Regretably, we still have viable opportunities to violate state discipline, to regard it in a compromising fashion.

In the effort to qualitatively improve planning, to efficiently utilize everything at the disposal of kolkhozes and sovkhozes, a large role belongs to the economic departments of agricultural organs and enterprises. Economists are obliged to persistently get rid of the inertia and antiquated methods of management, to opportunely uncover reserves and rapidly put them to use, to strictly monitor the economic factors of agricultural production. Constant communication with the workers and specialists, qualitative operational analysis of the activity of each internal economic unit and personal observations must give the economist a complete picture of the existing conditions at each production level. The first duty of economists is to help in increasing the efficient use of land and basic hardware, in increasing labor productivity and reducing material and monetary expenditures. It is no less important for him to continually sense avenues for development, to work out jointly with other specialists proposals on the renovation of equipment and reconstruction, to apply the achievements of science and advanced practices, to seek out more perfect forms and methods of management.

Efforts must be started in everyway possible to increase the efficiency of agricultural production. The more active the effort becomes locally, the more successfully will the goal of the party to increase the production of foodstuffs for the population and raw materials for industry be accomplished.

The CPSU Central Committee and the USSR Council of Ministers, based on the resolutions of the 25th Party Congress, on subsequent Central Committee Plenums, and the statutes of the USSR Constitution, are systematically taking steps to further improve the planning supervision of the economy, to develop democratic principles in managing production and to increase the creative initiatives of labor collectives.

The Soviet people have greeted the decree of the CPSU Central Committee and USSR Council of Ministers, "On Improving Planning and Strengthening the Action of the Economic Mechanism to Increase Production Efficiency and the Quality of Labor", with a feeling of deep satisfaction.

The CPSU Central Committee and the Soviet government has worked out specific measures to raise the level of planning and management. By perfecting the most important levers for controlling the economy suitable for advanced socialism, the party has posed the task of significantly increasing the effectiveness of social production on the basis of accelerating scientific and technical progress and growth in labor productivity.

The level of planning and management must be raised, they must be brought in line with the demands of the present stage of developed socialism, a significant increase in the effectiveness of socialist production must be achieved, scientific and technical progress and growth in labor productivity must be accelerated, the quality of products improved, and, on this basis, the constant economic growth of the country and well-being of the Soviet people assured.

The resolution observes that the most important areas for improving the entire planning operation is on choosing the most effective ways of achieving ultimate, national economic results, in the rational combination of sectoral and territorial development, of prospective and current plans; in the prefection of intersector and intrasector proportions; in providing balanced economic growth.

The year 1979 is coming to an end. On the threshold of the final, closing year of the Tenth Five-Year Plan the enterprise collectives are making their preliminary findings, seeking for additional reserves for growth in production and improvement in the quality of operations. Year after year, in giving life to the party's and people's plan, Soviet society takes new, enormous strides in the development of the nation's economy. The task of each agricultural worker, of each worker in the fields that serve agricultural production, is to make his own worthy contribution to fulfilling and overfulfilling the goals of the Tenth Five-Year Plan, upon which the resolutions of the November Plenum of the CPSU Central Committee are also focused.

COPYRIGHT: Izdatel'stvo "KOLOS", "Ekonomika sel'skogo khozyaystva", 1979

8506
CSO: 1824

ADVANTAGES OF MIXED FEED DISCUSSED

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 12, Dec 79 pp 73-74

/Article by S. Burtsev, senior scientific associate of the USSR Gosplan Council for the Study of Productive Forces, "The Advantages of Using Mixed Feeds"/

/Text/ The development of animal husbandry on an industrial basis, the creation of industrial stock breeding complexes and poultry farms, and the technology of production processes in these farms require strengthening and perfecting the feed base, increasing feed production, and improving its quality.

Today great significance is being attached to industrial feed production, and, primarily, to the production of mixed feeds. The effective use of feed grains and other kinds of feeds for raising livestock ensures the efficient feeding of livestock with nutritiously balanced mixed feeds at considerable savings.

At advanced livestock breeding complexes, which use high quality mixed feed, 5.7-6 feed units are required to produce a kilogram increase in cattle weight; for pigs, 4.3-4.5 feed units are required--that is, approximately half as much as farms which do not use balanced feeds.

Improved feeding significantly increases animal productivity. Thus, thanks to the use of complete, balanced mixed feeds as a whole throughout the public sector, chickens have increased egg yield from 132 eggs per hen in 1965 to 202 eggs in 1977. On poultry farms every ten eggs require 1.8-2 feed units, while on nonspecialized farms, inadequately supplied with mixed feeds, more than 3 feed units are required.

Comrade L. I. Brezhnev in a report to the July (1978) Plenum of the CPSU Communist Party said: "Our goal is to see that all grain, needed for livestock, be fed in a refined and balanced form. To achieve this, accelerated development of both the government's mixed feed industry and the production of mixed feeds in sovkhozes, kolkhozes, and other interfarm enterprises is called for."*

In the past few years the nation has established state, economic, and interorganizational mixed feed enterprises. The productive capacities of the state mixed feed industries make it possible to produce more than 50 million tons of mixed feeds, while the capacities of the economic and interorganizational enterprises, operating on two shifts--30-35 million tons of mixed feeds. However, because of a shortage of proteins the capacities of the plants are underutilized. In addition, the enterprises often process mixed feeds of inferior quality.

At the same time there are significant resources to make up for the protein deficient feeds and to reduce the protein shortage. The cheapest source of plant protein is leguminous crops, which are cultivated almost everywhere in the country. They contain 2.2 times as much protein as the grain of cereal crops. The most successful cultivation of leguminous crops has been achieved by the farms of Bashkir ASSR, Ul'yanovskaya and Kubyshevskaya oblasts, a number of oblasts of the Ukraine, where the yield of peas has been 22-26 cwt per hectare.

Considering the nation's need and especially that of the mixed feed industry for leguminous crops, state purchases must be increased. Increased state purchases of peas is a suitable way to establish the republics and oblasts, which have high yields of these crops, especially the Ukraine, Bashkir ASSR, Ul'yanovskaya and Kuybyshevskaya oblasts, as principal suppliers of peas for the mixed feed industry.

Of great importance is the development of soybean production. This valuable crop has a 35 percent protein content. The measures taken in this country to increase its production have ensured wider cultivation and larger harvests of this crop. In 1977 786,000 hectares of soybean yielded 513,000 tons of soybeans at 7 cwt per hectare, while in 1978 835,000 hectares were sown and yielded 638,000 tons of soybeans at 7.8 cwt per hectare. Favorable conditions for expanding soybean cultivation exist in Moldaviya, Kuban, the Crimea. According to multiyear data of the state strain testing stations of Moldaviya, an unirrigated hectare of land yields 18-24 cwt of soybeans, an irrigated hectare--26-30 cwt.

---

*L. I. Brezhnev, "On Further Development of USSR Agriculture," DOKLAD NA PLENUME TsK KPSS, 3 July 1978; POSTANOVLENIYE PLENUMA TsK KPSS, adopted 4 July 1978, Moscow, Politizdat, 1978, p. 23.

There is no doubt, the soybean cultivated in Primorye and in Moldaviya, Kuban and other regions, must become one of the most important crops, supplying plant protein in cake or groat form to the mixed feed industry.

Animal products such as meat-bone meal, fish meal, dry skim milk and others are also an important source for increasing the nutritive value of mixed feeds. Unfortunately, many medium and small sized enterprises of the meat processing industry still do not have salvage shops or facilities to process the meat and bone meal. As a result, many valuable scraps, obtained in the slaughter and processing of cattle, are not used for this purpose.

Dry skim milk may become a significant item for increasing the sources of protein for the mixed feed industry. Dairy industry enterpises return to kolkhozes and sovkhozes more than 20 million tons of skim milk (65 percent of output), which is being inefficiently utilized. If another 10-15 percent of the skim milk could be processed, this would provide an additional 300,000-400,000 tons of dry milk, which could be used to make mixed feeds for young livestock and could be processed as a whole milk substitute for calves and young pigs.

The fish industry supplies the trade network with raw fish. Inedible fish scraps are thrown away. These could be processed into fish meal. Tests are underway on processing ocean krill, of which the sea has a bountiful supply, into edible meal. However, the production of meal from krill is still expensive. In the next few years its mass production should be organized, which will make it possible to lower the cost of this product and to satisfy the needs of the mixed feed industry.

The creation of a permanent feed base for the livestock industry requires the efforts of not only agricultural workers, but of workers of other economic sectors (meat, dairy, food, fish, microbiological, chemical industries), which supply the feed production industry with the raw protein for making high quality mixed feeds.

COPYRIGHT: Izdatel'stvo "KOLOS", "Ekonomika sel'skogo khozyaystva", 1979

8506
CSO: 1824

NEED TO DEVELOP ENTERPRISE SUBSIDIARY FARMS

Moscow TRUD in Russian 14 Dec 79 p 1

[Editorial: "Enterprise Subsidiary Farms"]

> [Text] Our Pervomayskiy Glass Plant has developed swampy wasteland land for a subsidiary farm. We did this thanks to a Gosbank loan and from material incentive funds, with the active participation of our small collective in volunteer Saturdays and Sundays. And now our "agroshop," as we call our subsidiary farm, not only has a feedlot but also a hothouse which operates on heat from the exhaust gases of the glass furnaces, and a pond for breeding fish.
>
> Thanks to our subsidiary farm, a complete meal in our cafeteria costs 45 to 50 kopecks. Signed, N. Babchenkov, plant committee chairman. (From a speech in the school of advanced experience at the Exhibition of Achievements of the National Economy.) Smolenskaya Oblast.

Many enterprises of the RSFSR Ministry of Construction Materials Industry have subsidiary farms that help a great deal in organizing the collective's food services. Efforts along these lines are continuing. Next year, 350 out of 420 enterprises in the ministry's system will have such agroshops. The collectives of most of the ministry's enterprises have accepted as a militant program of action the words of CPSU CC General Secretary Comrade L. I. Brezhnev at the July 1978 CPSU CC Plenum urging efforts to achieve a situation in which the population's requirements in such products as meat, milk, eggs, vegetables, potatoes, and certain others are satisfied as much as possible from local production, especially in Siberia and the Far East.

Many economic organizations and trade union committees are focusing constant attention on the development of subsidiary farms. Such agroshops are being set up and expanded at the Chelyabinsk Pipe Rolling Plant and the Kuybyshev Aviation Plant, in the Magnitogorsk Metallurgical Combine, and in the Komsomolsk Timber Industry Enterprise (Tyumenskaya oblast).

Consider this detail: The workers' dining facilities in the mining towns of the Kuznetsk Basin are supplying all their own potatoes and vegetables, and the Arctic towns of Vorkuta and Appatity are supplying all their own milk, from subsidiary farms. These are not isolated examples.

Within the jurisdiction of enterprises and administrations of four union ministries--ferrous metallurgy, timber and woodworking, coal industry, and railways--there are more than 350 subsidiary farms and 800 hog fattening operations.

At the November 1979 CPSU CC Plenum, Comrade L. I. Brezhnev emphasized that "ensuring the uninterrupted supply, adequate production, and broad assortment of foodstuffs of high quality constitutes one of the most important tasks stemming from the party's course of action to improve the workers' wellbeing."

The creation of subsidiary farms (or agroshops as they are called), especially in remote areas where it is difficult to make deliveries, and in newly developed regions, including Siberia and the Far East, is of great importance.

This is convincingly demonstrated by figures. Today the country's enterprises and organizations have a total of 43,000 subsidiary farms annually producing 2.4 million tons of grain (primarily feed grains), 275,000 tons of meat, more than 600 million eggs, 790,000 tons of milk, 800,000 tons of potatoes, and many other goods.

The necessity of developing subsidiary farms is also emphasized in the special CPSU CC and USSR Council of Ministers decree "Subsidiary Farms of Enterprises, Organizations, and Institutions," as well as the associated decree of the AUCCTU Presidium directing trade union organizations to step up efforts to develop agroshops and improve their operation. The AUCCTU has instituted 100 certificates carrying cash prizes of up to 3,000 rubles to be awarded to collectives that have achieved high indicators in the production of farm goods.

In this regard it is very important to make use of advanced experience. There are those who can teach and those who can learn. A good example, in addition to those collectives mentioned above, is provided by the Tbilisi Aviation Plant imeni Dimitrov and the Leningrad Optical Mechanics Association imeni Lenin (LOMO). The LOMO's farm, for example, is located not far from the association's recreation area, and workers in their leisure time willingly contribute to improving the association's supply.

Vegetables, meat, and poultry go to kindergartens and nurseries and workers' dining facilities. And the volume of goods supplied by the LOMO's farm to the children's institutions and public food enterprises constitutes 30 percent of the total meat and meat products, 100 percent of the milk, 22 percent of the vegetables, 12 percent of the eggs, and so on.

The Tbilisi aviation workers have also developed an excellent farm. Along with everything else, this autumn they started taking fish from their fattening ponds.

Efforts on organizing and expanding subsidiary farms constitute an urgent task of the day. A number of enterprises have adopted plans to develop and expand agroshops in the coming years. Some plants and factories have set themselves the task of becoming fully self-sufficient in the near future with respect to products such as meat, milk, eggs, and so on. The Ministry of Timber and Woodworking Industry has worked out a substantial plan of agroshop development. All of this is being actively participated in by the trade union organizations, which are including the creation of subsidiary farms in their collective agreements, monitoring their progress, and mobilizing trade union members to resolve this vital task.

Unfortunately, in many places the people are not focusing the necessary attention on the development of these agroshops. The network of subsidiary farms is not being developed adequately in the enterprises of the Ministry of Construction of Heavy Industry Enterprises, the Ministry of Electrical Equipment Industry, the Ministry of Heavy and Transport Machine Building, the Ministry of Power Machine Building, the Ministry of Power and Electrification, and certain others. The economic and trade union officials of the enterprises of these departments come up with thousands of excuses for not getting involved with subsidiary farms. This situation is intolerable.

The right thing is being done by those trade union organizations that have instituted control over the allocation of land sections necessary for the creation of subsidiary farms and are taking active part in organizing agroshops, helping the enterprises in every way to acquire the necessary equipment, and taking care of subsidiary farm workers, their living conditions and recreation.

The CPSU CC and USSR Council of Ministers decree "Subsidiary Farms of Enterprises, Organizations, and Establishments" is a guide to action for ministries, departments, and trade unions. It is essential that economic bodies and trade union organizations step up organizational efforts and make use of all resources to increase the production of meat, milk, potatoes, vegetables, and other goods.

6854
CSO: 1824

PRIVATE PLOT FARMS MUST BE GIVEN PUBLIC AID

Moscow SOVETSKAYA TORGOVLYA in Russian 23 Oct 79 p 2

[Article by M. Mamayev, chairman of the board, Chechen-Ingush Potrebsoyuz (Groznyy) under rubric "Private Farming--the Concern of All": "A Substantial Contribution. What the Private Plot Does and Can Give in Replenishing Commercial Resources"]

[Text] The private plot farm is of great importance to society. With his orchard, garden, and poultry the plot owner can not only meet his own family's needs but also sell the surplus to the state. In the purchase and sale of such surplus goods, a special place is assigned to the consumer cooperative.

There are substantial opportunities here. But how well are they being utilized by the cooperative organizations of our republic?

In 1978 they bought from the public more than 25 million rubles worth of farm goods. In 1979 this indicator should rise to 31 million. But private plot farms in the republic occupy more than 16,000 hectares. By the most modest estimates of economists this land could yield an even greater contribution.

Unfortunately, many rural inhabitants have begun to lose interest in plot farming in recent times. This is primarily due to the fact that the organizations that are supposed to help them are not performing satisfactorily. Here is an example.

At its meeting, the Chechen-Ingush ASSR Supreme Soviet Permanent Commission for Agriculture examined the work of the Soviets of People's Deputies of Achkhoy-Martanovskiy Rayon with respect to helping workers and employees to develop private farm plots. It was noted that the rayon's sovkhozes not only failed to increase but even reduced the sale of feed for the maintenance of private stock and poultry. With an assigned target of 100,000 head of young stock, the rayon's sovkhozes and the farms of Ptitseprom [Poultry Industry Trust] sold only 40,000 head. Credits allocated to the population to acquire cows and calves were not utilized. Last year the cattle population declined by 496 head, and sheep declined by 1,339 head. Forty percent of the sovkhoz workers and employees do not have farm plots. Yet they do live in the countryside.

Special mention must be made of the necessity of supplying the population with good planting stock for fruits, berries, and grapes, and also seeds and seedlings for vegetables. Things are disorganized in this regard. The rayons have not organized the sale of seeds. There is no advertising, and people have to make do with what comes to hand. Last year the nurseries sold the republic's population only 110,000 vegetable seedlings, 52,500 tree seedlings, and very small amounts of vegetable seeds. Considering that there are more than 187,000 private farm plots in the republic, the skimpiness of these figures is abundantly clear.

Not enough piglets, calves, and poultry are being sold to the public. In 1978, the public got 8,200 piglets (versus a target of 10,000), and 1.1 million birds--only a little over half of the target. Pedigree, zootechnical, and veterinary services are poorly organized. This is resulting in considerable stock losses.

At one time we were criticized because there were few reception centers and procurement workers in the republic. Now, 74 reception centers have been opened in the larger villages--one for every 300 households. In addition to purchasing farm goods, the centers also organize the sale of tools and other goods for private plots. It is true that the present centers are not yet up to today's requirements. We face the task of building permanent standard reception centers which can provide storage for a variety of vegetables, fruits and meat. The quality of their operation must be raised to the level of the best stores.

Meanwhile, consider the republic's mountain villages. Despite their favorable soil and climatic conditions, they raise practically no vegetables and very few potatoes. Private plots are used exclusively for corn. Vegetables and potatoes have to be brought in from other rayons. This is not very efficient.

In Groznenskiy, Shalinskiy, and Urus-Martanovskiy rayons private plots are being used exclusively to raise onions, garlic, and tomatoes. Village families are still not getting the necessary variety of goods.

In order to stimulate the desire of people to raise certain crops on their plots, we are drawing up contracts to purchase goods from the population and from the cooperatives, we are organizing the sale of essential building materials, household items, and combination feeds, we are supplying packaging materials and issuing advances in the amount of 50 percent of the contract amount for livestock goods and 30 percent for vegetable products.

One of the most accessible and advantageous reserves for increasing the production of meat and furs is rabbit and nutria breeding. As a result of measures that have been taken recently, numbers of these animals on private farm plots have been increasing. Last year alone the cooperatives purchased 26 tons of rabbit meat and 124,000 skins. But these possibilities are not being fully utilized. Practically no one in Sovetskiy, Shalinskiy, and Achkhoy-Martanovskiy rayons are engaged in rabbit and nutria breeding, although favorable conditions for this exist. Nor are the cooperative organizations and the republic's rabbit breeders' society involved in this vital matter. The republic's Ministry of Agriculture has failed to complete the target with respect to the sale of thoroughbred rabbits to the population.

Recently the republic's cooperative organizations have done a large amount of work to improve cattle and poultry feeding. They are setting up their own feed bases, and plans call for the extensive use of food wastes from public food service enterprises and industry. The initial results of the work of the Groznyy Procurement Office also deserve approval. Last year the collective fattened 19,000 birds and 300 head of livestock and set up a pedigree rabbit farm. The hog farms of the Naurskiy, Sunzhenskiy, and Shelkovskiy rayon potrebsoyuzes are being expanded. Good work has also been done this year by cooperative personnel of the Argun City potrebsoyuz. In a short time they built farms which are now raising 300 hogs and 66 head of cattle. Construction is underway on a fish breeding pond.

What has been done is just the beginning of a major effort in which all cooperative organizations and enterprises without exception must take active part. This year plans call for putting 3,000 head of cattle, 63,000 birds, and 2,000 piglets in feedlots. This will constitute a substantial contribution to present meat resources to improve supplies to the population and the public food service enterprises.

Livestock farming is a new business for the republic's cooperative workers. Development of this business requires particular conditions which we do not yet have. Thus, according to the decree of the obkom buro and the Chechen-Ingush ASSR Council of Ministers the cooperative members are to be allocated 1,900 hectares for crops and pasturage. The decree has been only partially carried out--we now have 630 hectares. We are not getting enough help in acquiring farm equipment.

In addition to increasing the production and purchases of farm goods, another important task is that of organizing high-quality marketing of them in the cities and workers' settlements. The Groznyy City Cooperative Trading System last year alone sold almost 3 million rubles worth of various kinds of farm goods.

Unfortunately, the necessary conditions for fruit and vegetable marketing have not yet been set up. We have very few modern Sel'khozprodukty stores. There are none in most of the rayon centers, and the situation is no better in Groznyy. We do not have a single big modern store of the Dary Prirody [Gifts of Nature] type. The Groznyy City Executive Committee is dragging its feet in implementing the decree of the republic's Council of Ministers concerning the allocation of store space to the city's cooperative trading system.

The land belongs to all the people. The proper use of considerable areas of fertile farm plots is a vital question of importance to society. In focusing attention on the inadequate utilization of the possibilities of the subsidiary farm plots of enterprises and the population, Comrade L. I. Brezhnev in his speech at the November 1978 CPSU CC Plenum pointed out that these farms require more help in the acquisition of young stock and the supply of feed. It is also essential to have a particular social climate in which kolkhoz members and sovkhoz workers feel that by raising livestock and poultry at home they are performing work that is useful to the state.

This directive must serve as a guideline in our everyday activities.

6854
CSO: 1824

METHOD OF EVALUATING FARM OPERATIONS DISCUSSED

Moscow EKONOMICHESKAYA GAZETA in Russian No 36, Sep 79 p 16

[Article by I. Vil'tsin and A. Leyerte, Candidates of the Economic Sciences: "Evaluating the Work of Grain Harvesting Units"]

[Text] The introduction of the Ipatov method of using farm machines and tractors to harvest grain and other crops requires a new approach in organizing competition and in evaluating the results of operations by mechanized work brigades. Associates of the Latvian Scientific and Research Institute of Farming and the Economics of Agriculture for this reason developed a system of recording and evaluating the work of grain harvesting units.

In arriving at the results the whole set of operations, carried out by the brigades, is taken into account: the cutting and threshing of the grain, the collecting of the chaff, and the scuffling of the stubble. These processes are evaluated in points according to appropriate conversion factors. The rating of a brigade's combine fleet is determined by an average factor, based on the various types of combines in use.

The area of mowed grain and the amount of threshed grain are evaluated in points by multiplying the size of the area harvested and the yield of the harvest by the appropriate coefficients, based on the labor intensiveness of these operations. The quantity of chaff collected is evaluated as a percent of the entire area, multiplied by an appropriate coefficient. The scuffling of the stubble is also evaluated in percent of area, subjected to scuffling, multiplied by a coefficient of labor intensiveness. Then the entire point total is multiplied by a coefficient of the technical features of the land of a given farm. This coefficient reflects the soil characteristics, the contour, the stoniness, the size of the run, and so forth.

The various types of combines are assigned the following factors: Sk-4—1.00; "Niva"—0.85, "Kolos"—0.70. The area harvested and quantity of threshed grain are accounted for by the application of the factor 1.5; the chaff gathered by 0.4, and the scuffling of stubble by 0.3.

A specific example of the calculation follows.

To determine the average conversion factor for calculating the ideal number of combines in a unit:

Type of Combine	No of Combines in Unit	Conversion Factor for Ideal Combines	Product of No of Combines and Conversion Factor	Average Conversion Factor for Ideal Combines
Sk-4	2	1.00	2.00	
Sk-5	3	0.85	2.55	
Sk-6	2	0.70	1.40	
TOTALS	7	—	5.95	0.85

The ideal number of combines is 8.235 (7 divided by 0.85).

The calculation of the total points for evaluating a unit is illustrated below.

This method has been tested and is being used in kolkhozes and sovkhozes of Latvian SSR to evaluate the operations of harvesting units on a regional basis and throughout the republic in general. The coefficient of technical land features of each farm is also used in evaluating the individual work of combine operators, operating under various conditions.

Type of Operations	Actuals	Ideal No of Combines	Actuals per Ideal Combine	Weights	Point Totals
Harvest Area (hectares)	172	8.235	20.88	1.5	31.32
Grain Threshed (tons)	344	8.235	41.77	1.5	62.66
Chaff Collected (as a percent of total area)	87.21	—	—	0.4	34.88
Stubble Scuffled (percent of plan)	66.70	—	—	0.3	20.00
Point Total	—	—	—	—	148.86
Coefficient of Land Features	—	—	—	—	1.20
SCORE					178.63

8506
CSO: 1824

PROBLEMS IN GRAIN STORAGE DISCUSSED

Moscow EKONOMICHESKAYA GAZETA in Russian No 52, Dec 79 p 16

/Article: "Caring for Grain"/

/Text/ Beyond the Urals hard conditions prevailed during this year's harvest. Frequent rain severely impeded the wheat growers and added to the troubles of the wheat buyers, since the grain went to market soaked. The head of the Kurganskaya Oblast grain products production administration, Vasiliy Ivanovich Voz'milov, discussed with our reporter what steps are being taken to preserve the grain.

"First of all, it should be said that in the past few years storage capacity in our oblast has increased appreciably. A significant amount of grain is now stored in good, fully mechanized grain elevators. We can store more than 2.6 million tons of grain in the elevators and mechanized storage facilities. And still this is not enough. For this reason, the construction of grain elevators continues.

"Of course, to prevent grain from spoiling in storage, it must be dried well. Oblast buyers normally receive 60,000 tons of grain a day, while grain dryers can process 87,300 tons a day. It would seem that the grain dryers had time to spare, but in reality the situation was quite the opposite. The grain was so wet that it had to be dried twice. Calculations showed that we needed 100,000 ton capacity drying chambers. The need for these chambers was particularly acute in the northern and eastern regions of the oblast. Unfortunately, our requests for the equipment were only partially met. We could have built and operated eight to ten dryers in a year, but we are getting only four to six.

Now and then one finds paradoxes. In Petukhov, for example, in the eastern part of the oblast, a 150,000 ton capacity grain elevator was built. Unfortunately, instead of the planned 2,000 tons of grain it can still only take in 800 tons. The reason is that only two drying chambers are in operation when at least six are needed. Likewise, the Dolmatovsk and Makushinsk elevators are short two dryers, and the Shatrovsk—one.

Upon the initiative of the Vargashinsk elevator workers A. Kobelev, L. Bondareva, Kh. Santakrus competition for effective use of machinery and for zero spoilage of the 1979 grain harvest has been widely emulated. The obkom bureau, the oblispolkom, the presidium of the oblast trade union council, and the Komsomol obkom bureau approved the initiative of the progressive workers. Results in the competition are published every ten days. High scores were achieved by collectives of Vargashinsk, Domatovsk, Makushinsk grain elevators. They effectively utilized the grain drying equipment and performed well in processing the grain.

The hard season revealed, as well, shortcomings in the operations of the Kurganskaya Oblast buyers. At a number of grain elevators and grain receiving points trucks loaded with grain stood idle for a considerable time because of haphazard scheduling. We are slowly replacing the small capacity unloading trucks with larger sized ones, which affects grain quality. Several problems in receiving graded grain have not been solved yet. The Kurgansk buyers are seeking ways to eliminate the shortcomings, to maintain the quality of the stored grain.

8506
CSO: 1824

UDC 631.15:33(47+57)

COST ACCOUNTING IN STOCKRAISING

Moscow ZHIVOTNOVODSTVO in Russian No 11, Nov 79 pp 7-11

[Article by A. M. Chursin: "Production Efficiency and Cost Accounting"]

[Text] The CPSU Central Committee Decree "On Further Improving the Economic Mechanism and Tasks of Party and State Organs" and the CPSU Central Committee and USSR Council of Ministers Decree "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Improving Production Efficiency and Work Quality" (July 1979) have become an event of enormous importance to the life of the party and the entire country. These decrees provide a thorough scientific analysis of the policies and practical activity of party and soviet organs to improve planning and the entire economic mechanism.

And, although the steps to improve planning and economic incentives which were outlined in these documents have been disseminated only to branches of industry and construction, they will doubtless also be of great importance to the work of agriculture, as an important branch of material production.

In this connection, it is necessary to analyze thoroughly and critically the existing system of planning and economic incentives and to develop effective steps to resolve the tasks set by the 25th Party Congress and CPSU Central Committee plenums in the area of agriculture.

Party and government decrees to solve economic and social problems successfully set the task of raising the level of planning and management in accordance with the demands of the present stage of development of the national economy. In this connection, particular attention must be paid in agriculture to improving the main form of planning branch development, the state five-year plan of economic and social development. Based on natural-economic features and farm specialization, such plans must outline unified state purchase plans with consideration of product quality. Purchase plans must be balancedagainst available production resources, volumes of deliveries of material-technical means and sources of financing, and must be coordinated in terms of rates and proportions with the development of all branches of the national economy and the agroindustrial complex. There is every grounds and every opportunity for recording plan fulfillment each year on the basis of annual results and in a running total for the completed years of the five-year plan.

Normative and balance methods of planning must be used widely at agricultural enterprises and associations. Annual plans should be worked out only on the basis of five-year plans. The fastest possible completion of development of a unified General Plan for Long-Range Siting of Agricultural Production, Processing Industry and Service Branches is of fundamental importance. Agricultural enterprise passports should be used widely to better substantiate the indicators being planned. Experience in working out economic passports is available in the Ukrainian SSR, individual oblasts of the Russian Federation, and Kazakhstan. In light of the new demands, the necessary additions should be made to them and they should be disseminately widely throughout agriculture.

The existing system of material stimulation of above-plan purchases of agricultural output, as is known, is called upon to ensure that nationwide interests are combined with those of individual collectives.

However, in practice, the effectiveness of material encouragement for overfulfilling the plan for sales of output to the state depends in decisive measure on the planned level, which does not exclude the influence of subjectivism on the part of local agricultural organs. A situation has developed in which agricultural enterprises are interested in understating firm plans; after meeting them, output it marketed at a 50-percent surcharge. Farms receiving less-taut purchase plans obtain more surcharges.

Surcharges for above-plan sales are generally distributed extremely unevenly among individual farms, which creates unequal economic conditions for expanded reproduction and for paying the the labor of enterprise workers. Inasmuch as the farms are interested in a lower state purchases plan, they are also interested in reducing their own reserves in the process of planning production. All this is unavoidably reflected in the planning of all other production indicators.

The party and government have set the task of accelerating the start-up and improving the use of production capacities, of increasing capital investment effectiveness. This problem is very urgent for the country's social stockraising. Suffice it to note that, of all the stockraising complexes, feed lots and poultry farms put into operation in 1971-1978, two-thirds have not yet reached planned capacity in terms of output produced; that includes 284 complexes for milk production, 69 for pork production and 39 for beef production, although there are examples of good work in this direction. Thus, in the Belorussian SSR many complexes have reached the planned level in terms of a majority of the economic indicators. They include the dairy complex of "Krasnaya Armiya" Kolkhoz in Vitebskiy Rayon, same oblast. In 1978, the milk yield per cow was 3,960 kg at this complex; 4.5 man-days and 1.11 quintals of fodder units were spent per quintal of milk; 99.6 percent of the output was marketed as first-quality; production profitability was 28 percent for milk. Good successes have been achieved by the dairy complexes at "Rassvet" Kolkhoz imeni K. P. Orlovskiy, Kirovskiy Rayon, the kolkhoz imeni XXI CPSU Congress, Mstislavskiy Rayon, Mogilevskaya Oblast, the kolkhoz imeni Kirov, Slutskiy Rayon, Minskaya Oblast, and others.

Questions of achieving the economic indicators anticipated in plans for building stockraising projects must be monitored unwaveringly by the leaders and specialists of farms and agricultural organs. Such indicators include: gross output, livestock productiveness, feed and labor expenditures per unit of output, output prime cost, number of workers, labor productivity and amount of profit.

Determining the most efficient directions for capital investments is an important means of improving investment effectiveness. Poorly thought-out managerial decisions are still being permitted, with stockraising facilities being built without consideration to developing the fodder base. Incorrect capital investment planning leads to disproportion in the development of individual branches, to failure to develop production comprehensively. Suffice it to say that in a number of oblasts and union republics the necessary capital investments have heretofore not been allocated to develop the material base of feed production. In Kemerovskaya, Belgorodskaya, Kurskaya and Kurganskaya oblasts, 2-3 percent of the total amount of capital investment in production construction has been allocated to develop the fodder base in this five-year plan.

The party teaches that there is no other way but by rapid labor productivity growth to resolve the diverse economic and social tasks facing the country. The current five-year plan anticipates per-worker labor productivity growth in agriculture of 27-30 percent as compared with the productivity level in the Ninth Five-Year Plan. On many farms, rayons and oblasts, opportunities for labor productivity growth are still being used inadequately and labor productivity growth assignments are often not met. Kolkhozes and sovkhozes in the Turkmen, Tadzhik and Kirgiz union republics have the greatest lag.

As a result, labor expenditures per unit of output are decreasing slowly. But on kolkhozes of the RSFSR and the Uzbek, Moldavian and Armenian union republics, labor expenditures on pork production did not drop during 1975-1978; in the Ukrainian, Kirgiz and Armenian union republics they did not drop for mutton; in the Uzbek, Kazakh and Georgian republics they did not drop for poultry meat; in the Russian Federation, Kazakhstan, Moldavia, Tadzhikistan and Kirgizia they did not drop for egg production.

Comrade L. I. Brezhnev, CPSU Central Committee General Secretary, pointed out at the 25th Congress of our party that: "Now, as the material and technical base of agriculture is being strengthened, the task of increasing its efficiency and improving all qualitative indicators stands upright.

This requires first of all intensifying the responsibility of cadres, their initiative and concern that the funds and material resources being allocated by the state will provide the maximum return, that kolkhoz and sovkhoz internal reserves will be better used. And such reserves do exist."

That is really true. Calculations show that reducing the prime cost of all agricultural gross output in the country by just one percent would provide a savings of 970 million rubles, including a 510 million ruble savings in stockraising. Raising stockraising worker labor productivity by one percent is the equivalent of a 720 million ruble increment in output. Improving the effectiveness of fixed production assets use in public stockraising by one percent would save 840 million rubles in capital investment.

It is good to produce a lot of output, but it is not everything. Improving production efficiency requires a precise knowledge of what one quintal of output costs, at what quality it is being sold to the state, and with what revenue each ruble invested in production is circulating. Consequently, the fight to increase the economic effectiveness of all branches of public production is now the most important and topical cause for leaders and specialists, for all rural laborers.

In our country there are many farms producing stockraising output at low prime cost. According to USSR Central Statistical Administration data, in 1978 some 360 kolkhozes and sovkhozes spent 17 rubles in material-monetary means to produce one quintal of milk, some 1,142 farms had a prime cost per quintal of hog weight gain of less than 110 rubles, and 1,108 farms had a prime cost per quintal of cattle weight gain of less than 120 rubles.

The "VINNI" support-demonstration sovkhoz-tekhnikum imeni XXV CPSU Congress in Rakvereskiy Rayon, Estonian SSR (Director Kh. P. Kallaste) produces inexpensive stockraising output with minimal expenditures of labor and feed. In 1978, the prime cost per quintal of milk was 15 rubles 91 kopecks, per quintal of cattle weight gain -- 110 rubles 50 kopecks, and per quintal of hog weight gain -- 93 rubles 22 kopecks, with labor expenditures of 3.[illegible], 14.8 and 10.0 man-days, respectively. Some 102 fodder units was spent per quintal of milk, 823 fodder units per quintal of cattle weight gain, and 579 fodder units per quintal of hog weight gain. The farm's stockraising is a high-revenue branch, with a profitability of 72 percent, including 62 percent for milk production and 60 percent for beef production.

The example of the country's leading enterprises must serve as a beacon to increasing the effectiveness of social production, to the appropriate expenditure and use of the resources of agricultural production. Economy and thrift on kolkhozes, sovkhozes and agricultural enterprises must signify an intelligent, conscious attitude towards labor, respect for the laborer doing specific useful work and concern for the well-being of people. The economic interests of the collectives and of each worker must be effected realistically and actualized practically in economy and thrift procedures.

Questions of further developing cost accounting are of important significance in perfecting the economic mechanism in agriculture. The fact is that many agricultural leaders and specialists have not recognized up until now the enormous role played by cost accounting in increasing production efficiency.

Cost accounting is the basic method of running a farm; it ensures that the best results will be achieved with the least expenditures of labor, material and financial resources, the maximum use of production capacities and internal production reserves, observance of economy procedures, reduced output prime cost and higher production profitability.

Cost accounting is done for agricultural enterprises in farm-wide and intrafarm forms. Economic interrelationships with the state, enterprises and organizations are established on the basis of farm-wide calculation. Such economic levers as price, profit, credit and others are used extensively here. Relations between the enterprise as a whole and its subdivisions (brigades, farms, shops, departments) and also between subdivisions and individual workers are established on the basis of intrafarm calculation. The conditions of enterprise-wide calculation are regulated by the state, and those of intrafarm calculation, by the enterprise itself.

Intrafarm calculation is advantageously distinguished from many other steps aimed at increasing the effectiveness of agricultural production, in that it does not require special additional expenditures for its introduction; to the contrary, it is assumed expenditures will be economized. At the same time, cost accounting orients farm leaders and specialists and those of farm production subdivisions towards greater organization, thrift, intelligent and efficient production management, and displaying socialist enterprise in all possible ways.

Further cost-accounting development must be along the line of using its elements comprehensively: having the national economic interests and those of the collective of workers at agricultural enterprises agree in the system of cost accounting and economic incentives; the material stimulation of worker collectives to use intensive production growth factors, save live and materialized labor and improve product quality; the use of objective methods of evaluating the effectiveness of economic decisions; perfecting the methods of economic analysis of the activity of cost-accounting links.

Cost-accounting elements should be used comprehensively on the basis of long-term agricultural enterprise activity -- five-year plans and economic normatives. The leaders and specialists of a number of poultry farms of Moscow Oblast have made a significant contribution to perfecting intrafarm calculation. Personal efficiency accounts are used to evaluate the activity of collectives of intrafarm subdivisions and individual workers at the Shchelkovskiy Production Poultry-Raising Association and the Petelinskiy Poultry Farm.

Under these conditions, the activity of each enterprise worker is evaluated comprehensively in physical and cost terms: based on gross output and product quality per square meter of shop production area; productiveness and protection of the poultry flock, labor expenditures and feed expenditures. This evaluation of worker economic activity on the basis of personal accounts is well-coordinated with their material interest in the results of their own labor, with the overall results of farm production-financial activity.

Agricultural organs of the Lithuanian and Belorussian SSR's are doing a great deal of work to perfect evaluation indicators for the agricultural activity of kolkhozes, sovkhozes and their primary branches, plant-growing and stock-raising, based on available production-economic conditions and resources.

The systematic introduction of measures to improve the planning and management of the economy and the economic mechanism in agriculture will facilitate increasing the efficiency of production on all kolkhozes, sovkhozes and interfarm enterprises and associations and the overall cause of improving the well-being of rural laborers and of the entire Soviet people.

COPYRIGHT: Izdatel'stvo "Kolos", "Zhivotnovodstvo", 1979

11052
CSO: 1824

UDC 637.5+636.2

CREATION OF HIGHLY PRODUCTIVE MEAT CATTLE HERD

Moscow VESTNIK SEL'SKOKHOZYAYSTVENNOY NAUKI in Russian No 9, Sep 79 pp 40-49

[Article by B. A. Bagriy, doctor of agricultural sciences, Main Breeding-Genetics Center of the Association on Breeding in Animal Husbandry of the USSR MSKh [Ministry of Agriculture]: "The Creation of a Highly Productive Herd in Meat Livestock Farming"]

[Text] The decisions of the 25th CPSU Congress call for an increase in meat production for all types of meat of up to 15-15.6 million tons in dressed carcass weight by 1980. The July 1978 Plenum of the CPSU Central Committee assigned the task of increasing production to 19.5 million tons by the end of 1985. Beef has a leading place in the country's meat balance. By the end of the 11th Five-Year Plan its production should exceed 9 million tons.

The realization of this important goal will occur as a result of the use of all reserves: the further intensification of the branch; a strengthening of the feed base, allowing for intensive raising and fattening of livestock until it reaches a weight of 400-450 kilograms live weight; the elimination of barrenness; the introduction of industrial cross-breeding of cows of dairy and dairy-meat breeds with the sires of rapidly-maturing specialized meat breeds.

Specialized meat livestock farming will play a special role in solving the problems of high-quality and inexpensive beef. At the July Plenum of the CPSU Central Committee, L. I. Brezhnev emphasized that in the near future this branch must be developed to such an extent that it will be transformed into a great source of the country's high-quality meat.

In many regions of the country masses of specialized meat livestock are being created. Their number is 4 million head. According to predictions, the herd of specialized meat cattle must increase significantly. There are about 3 million pedigree animals in meat livestock farming. Among them the most common are native breeds--the Kazakh White-Faced (1.5 million head, 63.1 percent) and the Kalmytsk (400,000, 15.3 percent). A total of 10 breeds are utilized including, in addition to native breeds, the Hereford, Aberdeen-Angus, Charolais, Shorthorn, Santa Gertrudis, Limousin and

and Chianina. There are 160 functioning breeding sovkhozes and reproduction farms for meat cattle.

In our country beef production has increased from 3.9 million tons in 1965 to 7 million tons in 1978. In 1965 17 kilograms of beef were produced per inhabitant; in 1978--27 kilograms. However, the needs of the population for beef are far from being completely satisfied. On the average in the USSR the yield of meat in dressed carcass weight is 60 kilograms per animal. However, with scientifically-based herd reproduction, intensive raising and the fattening of the entire meat contingent it is possible to yield 80 kilograms and more.

Meat livestock farming has been developed in Kazakhstan, Siberia, in the Southern Urals, in the Northern Caucasus, in the Ukraine and partially in the Central Asian republics. Being the least labor-intensive branch, it requires few expenditures for the building of facilities, makes it possible to utilize natural pastures and the wastes from field farming with relatively small expenditures of concentrates. With an efficient organization, livestock farming is highly profitable. The cattle of specialized meat breeds produces high-quality beef and heavy hides and skins, as attested to by the long-term practical experience of the sovkhozes of Orenburgskaya, Rostovskaya and Volgogradskaya oblasts, the Kalmyk ASSR, the Ukrainian SSR and the Kazakh SSR.

The new form of organization for the production of beef was the creation of state complexes and inter-enterprise concerns for raising calves and for fattening cattle using industrial technology. Production mechanization and automation in such enterprises (Pashskiy of Leningrad Oblast, Yumatovskiy of Bashkirskaya ASSR, Voronovo of Moscow Oblast, Mir of the Belorussian SSR and others) sharply increase labor productivity.

According to the calculations of scientists and specialists from the USSR MSKh, in the near future it will be necessary to significantly increase the herd of meat cattle and to expand the zone of meat livestock farming. In order to do this production requires accelerated methods for developing highly productive meat animals and herds.

In order to create large masses of meat cattle all existing methods should be employed--expanding the reproduction of cattle of meat breeds; the formation of meat herds on the basis of conversion (absorption) cross-breeding of cows from dairy and combined breeds with meat bulls; the multi-breed (2-3 breed) cross-breeding for replenishing useable female herds. We must develop new types of highly productive meat animals that are capable of large weight gains and of effectively utilizing feeds. We must develop daily weight gains of 1,200-1,500 grams and to produce a live weight of 550-600 kilograms at the age of 18 months while utilizing 6-7 feed units per kilogram of weight gain.

The development of new highly productive animals and herds in breeding and commodity livestock farming requires a thorough scientific search, effective selection methods and a complex approach.

Table 1
Dynamics of Live Weight of Cows (Kg)

(1) Порода	(2) I отел			(3) II отел			(4) III отел		
	n	(5) Живая масса	Животные I класса и выше (%) (6)	n	Живая масса (5)	Животные I класса и выше (%) (6)	n	Живая масса (5)	Животные I класса и выше (%) (6)
(3) Герефордская (7)	581	435	69.6	406	471	65.3	1257	528	69.5
Казахская белоголовая	2103	411	47.9	237	457	52.1	6454	474	50.8
Абердин-ангусская (9)	298	413	62.0	102	450	64.7	833	481	62.7
Шароле (10)	110	614	99.0	175	631	100.0	521	664	91.9
Шортгорнская (11)	591	450	55.3	342	473	55.6	520	492	48.7
Калмыцкая (12)	860	378	49.6	393	406	63.1	2765	439	37.0

Key to Table 1:

1. Breed
2. First calving
3. Second calving
4. Third calving
5. Live weight
6. Animals of Class I and above
7. Hereford
8. Kazakh White-Faced
9. Aberdeen-Angus
10. Charolais
11. Shorthorn
12. Kalmytsk

Direction of Breeding

In world and native selection in meat livestock farming preference is given to animals of the large type with intensive muscular growth and with intensive development of fat deposits. In large breeds most nutrients are used for the formation of musculature and fewer nutrients are used for fat-formation. On the contrary, small animals expend significantly more nutrients for the formation of fat.

By taking demand into consideration, breeders have concentrated their efforts on developing large animals with a pronounced meat-type build capable of yielding mature beef with excellent taste and culinary qualities at an age of 15-18 months. Small breeds are being improved with efforts to raise large but very fat animals. Raising the intensity of the growth of livestock and obtaining high-quality carcasses from it at an earlier age can be achieved by intensive raising and fattening. The selected direction for world breeding in meat livestock farming has had a certain effect on the types of meat animals and the morphological composition of the carcasses in recent years. The layer of subcutaneous fat is getting smaller and the area of the muscular ocellus is increasing. There has been an increase in the output of pulp in the spinal and hip sections of the carcass. Researchers feel that in about 10 years the live weight of cattle at slaughter will increase to 670 kilograms and more. The average daily weight gain will increase to 1,800 grams while rations will include up to 50 percent concentrated feeds.

Table 2

Dynamics of the Live Weight of Bullcalves (Kg)

Порода (2)	8 мес (1)			15 мес (1)			18 мес (1)		
	n	живая масса (3)	животные I класса и выше (%) (4)	n	живая масса (3)	животные I класса и выше (%) (4)	n	живая масса (3)	животные I класса и выше (%) (4)
(6) Герефордская (5)	400	215	68.3	207	404	93.7	63	446	95.0
Казахская белоголовая	995	205	77.6	167	338	94.0	54	406	74.1
Абердин-ангусская (7)	225	194	59.5	65	387	87.7	9	396	100.0
Шароле (8)	95	163	66.3	87	523	98.9	40	628	100.0
Калмыцкая (9)	247	200	24.7	234	321	67.4	31	428	100.0

Key to Table 2:

1. Mouths
2. Breed
3. Live weight
4. Animals of Class I and above
5. Hereford
6. Kazakh White-Faced
7. Aberdeen-Angus
8. Charolais
9. Kalmytsk

These suppositions are based on scientific experiments. The genetic potential of practically all meat breeds is high but it is not realized fully due to insufficient feeding and at times due to misdirected selection and breeding. This is reflected in the data on the development of animals of some meat breeds in a number of pedigree enterprises in the country. It is based on massive zootechnical material for 1977 (Tables 1, 2, 3).

Table 3

Dynamics of the Live Weight of Heifers (Kg)

(2) Порода	8 мес (1)			15 мес (1)			18 мес (1)		
	n	живая масса (3)	животные I класса и выше (%) (4)	n	живая масса (3)	животные I класса и выше (%) (4)	n	живая масса (3)	животные I класса и выше (%) (4)
(6) Герефордская (5)	731	198	73.9	607	324	83.2	517	351	73.8
Казахская белоголовая	2670	191	79.8	354	302	76.3	895	350	88.9
Абердин-ангусская (7)	148	177	84.4	74	275	77.8	45	271	86.7
Шароле (8)	111	247	83.8	636	350	75.0	30	411	93.3
Шортгорнская (9)	106	168	38.7	88	258	50.0	120	283	66.7
Калмыцкая (10)	882	181	85.1	—	—	—	1007	307	44.1

Key to Table 3:

1. Months
2. Breed
3. Live weight
4. Animals in Class I and above
5. Hereford
6. Kazakh White-Faced
7. Aberdeen-Angus
8. Charolais
9. Shorthorn
10. Kalmytsk

In comparison with the standard (minimal requirements) the genetic potential of animals from meat breeds is realized an average of 70-75 percent. That of Kalmytsk and Shorthorn, which are extensively available, is realized by only 50 percent. At the same time, all the breeds have a high genetic potential that can be used as a basis for new types of animals during inter-breed crossing and for creating masses of highly-productive cattle in the reproduction of pure breeds. This is confirmed by the practical experience of many breeders and leading enterprises in the country which are involved in the reproduction of the meat herd. Thus, four-breed hybrid bullcalves (n=40, 3/8 Charolais X 3/8 Chianina X 1/8 Simmental X 1/8 Grey Ukrainian) in the Kolkhoz imeni Postyshev of Cherkasskaya Oblast, UkSSR reached a live weight of 518 kilograms (500-599) at the age of 12 months, having a daily weight gain of 1,304 grams.

At the present-day stage it becomes necessary to include a number of new characteristics in the selection process. These reflect the needs of consumers regarding meat quality and the suitability of animals for industrial technology, which was not paid attention to previously--the diameter of the muscular ocellus, the intensiveness of fat deposits, the strength of the legs and of the hoof horn and the resistance to disease. Selection and technological methods are needed to accelerate the development of generations (better development, earlier coupling for breeding). There is a practical need for the development of animals which will first bear young at the age of 2 years and not at 36 months, as is the case now. A number of breeds, and especially the Charolais, requires breeding to decrease the number of difficult births.

Breeding work means deciding which animals will make the largest contribution to improving the next generations. It should be kept in mind that in addition to artificial selection which is in the hands of the breeder, there is also natural selection, which is directed at preserving the breed and which gives a preference to those animals which survive best in the conditions of the environment. As a rule they have the strongest constitutions and a high reproductive capability. In total productive characteristics they approach the average population. On the other hand, animals that are highly productive as a result of the great physiological load on the organism are most frequently least resistant to changes in the environment. For this reason with natural selection the animals that are produced are not highly productive, but of average possibilities. The selection of highly productive animals must be accompanied simultaneously by improved feeding. It is commonly known that the effectiveness of breeding work is decreased as the number of characteristics that are being selected increase. According to the materials of many researchers, in breeding for one characteristic the greatest effectiveness is achieved, for two characteristics it is decreased by 29 percent, for three--by 42, for four--by 50 and for five--by 45 percent. The leading selection trait in meat livestock farming is the intensity of growth, which is highly correlated with the live weight of the animal, the weight of the carcass and the weight of the meat yield. Thus, breeding for growth intensity in the herd of the Bay Farm in the USA over a 10-year period resulted in an increase in the live weight of year-old bullcalves of the Aberdeen-Angus breed from 400 to 472 kilograms, or of 18 percent. The average daily weight gain at the age of 7-12 months increased from 1,180 to 1,516 grams, or by 28 percent. In the herd over 6 percent of the animals gained over 1,800 grams daily.

The requirements of intensive livestock farming dictate the necessity of setting more specific and clearer goals for improving herds. Breeding plants plan to significantly raise the growth intensity of bullcalves.

Preservation, Enrichment and Utilization of the Gene Fund

The gene fund is the totality of all genes existing in individual animals comprising a population (breed). We know that the gene fund does not remain constant from one generation to another in the process of breeding-selection work. This is encouraged by natural selection, the influx of genes from other populations during cross-breeding and hybridization, and the appearance of mutations. During artificial selection for reproduction animals are chosen for the most desireable characteristics. These animals make a noticeable contribution into the gene fund for the next generation. The widely-used **inter**-breed crossing in livestock farming with inter-variety hybridization enables breeders to produce animals in the next population which will combine the best characteristics of both sets of parents. New inherited changes also arise as a result of mutations. Individual animals with valuable characteristics that appear suddenly affect subsequent generations in the breed's gene fund.

In order to successfully solve the difficult problems on the continued improvement in productivity of meat animals it is essential to enrich, preserve and utilize the gene fund of meat animals. This is facilitated by modern methods of accumulating and storing semen for long periods of time in a frozen state. However, these possibilities are not being utilized sufficiently in work with meat breeds of cattle. Semen reserves from bulls of meat breeds are very meagre in the semen banks of the Central Station of Artificial Insemination of the All-Union Scientific-Production Association on Selection in Animal Husbandry, in the All-Union Scientific-Research Institute for the Reproduction and Genetics of Agricultural Animals and in the All-Russian Scientific-Research Institute of Breeding. During recent years the procurement of semen from the sires of meat breeds has been curtailed to a minimum. Because of the poor supplies of semen and the insufficient volume of artificial insemination in meat livestock farming the proportion of bull sires is increased. Moreover, most of them are found not in stations for artificial insemination but in kolkhozes and sovkhozes (up to 70-100 bulls in one enterprise). In the RSFSR of the total 19,800 bull sires only 180, or 0.8 percent are found in breeding enterprises. This results in an inefficient utilization of bull sires, makes the upkeep of the basic herd more expensive and elicits additional expenditures of labor and feeds. One the average one bull sire from meat breeds inseminated 22 cows in 1977 in all enterprises of the RSFSR. The effectiveness of utilizing bulls in the zones of developed meat livestock farming is especially low. The largest number of bulls is concentrated here. In the Central Chernozem Zone of the RSFSR in 1977 one bull sire inseminated 566 cows, in Severo-Zapadnyy Rayon--378, in Povolzhskiy--17 and Ural'skiy--16. This kind of situation hinders the pace of genetic improvement of the herds in pedigree and commodity stockbreeding. Within the system of breeding centers it is essential to strengthen the work on accumulating semen supplies from the sires of meat breeds and to supply breeders with the necessary genetic material in the form of intensely-frozen semen. One of the first things that must be done is that the semen fund must be replenished from the best bull sires which have been tested for the quality of their progeny. Their intensive utilization by means of artificial insemination will transfrom the herd in a short period of time. Without the extensive introduction of artificial insemination it is impossible to rapidly achieve a sharp improvement in the productive and pedigree qualities of cattle or to increase the number of meat animals in accordance with the program for the development of the branch. The transition in meat livestock farming to artificial insemination of cows and heifers is a priority goal. The introduction of this device will strengthen controls over the use of the mother herd and to increase the yield of calves to 95-100 per each of 100 cows and heifers. The artificial insemination of meat breeds will significantly curtail expenditures for the upkeep of bulls and the cost of weight gain. Most importantly, however, the best sires, tested for their own productivity and for the quality of their progeny, will be included in the selection process.

The collection must contain semen from bull sires-champions of meat breeds, exceptional bull sires and the sons of record-producing cows and the semen of the best bull sires from stores in foreign banks, of new imported breeds which are not being reproduced here yet and of native regional breeds. We should also include the semen of wild varieties and relatives of cattle--the American bison and the European aurochs.

The procurement of semen (volume and breeds) should proceed with a view to selection programs and goals in the area of developing new breeds, types, lines and herds, to planned volumes of cross-breeding and to the breeds being utilized.

The semen funds are utilized for two purposes--for mass improvements of the productive qualities of animals and for developing new types and breeds in the future.

Reproduction Methods and Systems in Meat Livestock Farming

In genetic terms the breed represents a complex system of heterozygotic genotypes whose internal balance is regulated by purposeful selection and breeding. In pedigree herds where the aim of breeding is the creation of something new selection occurs for the purpose of planned breeding, which forms the animal of a specific type and level of productivity.

Modern pedigree stockbreeding is acquiring the character of large-scale selection, by which we mean a complex of organizational and zootechnical measures directed at the quality transformation of the productive features of animals in the entire population according to a single plan. In accordance with large-scale selection all enterprises that raise cattle of meat breeds are divided into two selection levels according to the degree of genetic improvement--selection-genetic and utilitarian. The first includes breeding enterprises and farms, stations for testing bull sires and breeding enterprises on artificial insemination. The second includes enterprises and complexes producing milk, those **reproducing** and raising utilitarian meat animals and those fattening calves. Each enterprise is specialized for fulfilling one of the goals within the general reproduction program.

In order to increase the effectiveness of breeding we need clear methods and systems for reproducing animals which will secure the development of highly productive meat animals of pedigree stock and herds of the industrial type in a short period of time.

Selection-pedigree stockbreeding in breeding enterprises of meat livestock farming is based on the following principles. Classical methods of individual selection and breeding are utilized here with a view to modern genetic concepts. The **animals** that are exceptional in pedigree and productive qualities are singled out and their valuable characteristics are concentrated in the genotypes of utilitarian animals or the initiators of lines and families. Artificial insemination is utilized to reproduce the valuable genetic characteristics of the originators of lines and families for large groups of animals (lines, intra-breed types). The breed is divided into lines and families, thereby maintaining optimal heterogeneity. This allows breeders to utilize non-additive effects while singling out specific combinational capabilities in inter-line crosses.

Scientific institutions have studied various breed combinations during crossing in meat livestock farming. They have accumulated material on improving and developing breeds of animals. They have worked out many recommendations, but these have not yet been unified into a single breeding program according to breeds and regions of the country. Because of this the achievements of science and selection cannot be fully utilized. Meanwhile, the practice of selecting breeds, the reproduction methods and the technology for raising hybrid calves frequently follow their own direction, depending on the intuition of specialists and utilizing breeds that are imported into a particular region as well as those that are traditionally used.

Based on an evaluation of the genetic structure of herds in breeding enterprises it is expedient to adapt programs of linear reproduction. Their goal is the planned production of intra-linear bulls for the needs of artificial insemination, an evaluation of their pedigree value and their intensive utilization. Plant lines are created from the best sires through male progeny that persistently transmits the type of the founder of the line reflected in pedigree and productive qualities of female animals. The mother stock lines can be structurally subdivided into families (female progeny of outstanding fathers within four generations). In working with lines, intra-line selection and crossing are utilized. If outstanding results are achieved from the cross the best bulls from the cross are earmarked for starting a new plant line. Large-scale selection sharply raises the demand for pedigree bulls and for this reason the elimination, selection and evaluation of sires is becoming one of the basic links in improving the breed.

There must be a greater demandingness toward the selection of mothers for future pedigree sires. Their insemination strictly follows the plan of individual selection of those lines which are essential for continued selection. Unfortunately, in meat livestock farming there has been no work on developing highly productive bulls. The history of zootechnology attests to the fact that meat breeds were created not only with the aid of abundant rations. It is impossible to transform a slow-growing breed lacking much meat into a rapidly-growing meaty animal through feeding alone. The basis for the creation of meat breeds was the appearance in herds of individual animals of a more clearly evident meat type, having the capability of intensive growth, having more meat, having a "propensity" for intensive feeding and having the ability to transmit these valuable characteristics to their progeny. The exceptional individuals were the result of combinations of various genotypes. Such prepotent animals consistently transmit all of their characteristics to their progeny. Prepotent animals produce other animals that look exactly like them, transmitting their individual traits to an entire plant. In doing this, they have a decisive effect on the qualitative transformation of herds. In examining prepotent animals from the point of view of why they appear it has been determined that this can be accidental, not prepared by planned selection work, or it can be the result of planning. Prepotent animals should be developed through gradual selection. An important role in eliciting prepotency in sires is played by the selection of the proper mothers. In one herd a sire can turn out to be very potent, in another not. From a very good sire having a number of economically advantageous characteristics that were secured in a homozygotic state we can expect a consistent transmission of valuable characteristics to its progeny (individual inherited properties here can be represented by the symbol KKLLMM). In addition we can have an excellent sire in which a number of inherited properties are secured in a homozygotic state, and one is in a heterozygotic state (KkLLMM). For a dependable transmission of the characteristic (Kk) that is in a heterozygotic state it is essential to have the support from the brood cows (bulls), which must have the characteristic Kk, or better still--KK. In other groupings the desired characteristic may not appear. In this we see the necessity for a scientific approach to the development and utilization of superior bulls.

The opinion has been expressed (F. F. Eisner) that there should be a restructuring of the selection system used in stockbreeding plants in which the line to which an animal belongs is determined solely by the right side of the geneology without consideration of the fact that among the number of ancestors of a given animal there are 2-3 founders of other lines if we include those on the left side of the geneology. As a result many bull sires of specific lines include in their geneology another 2-3 founders of other lines. Some lines are identical in the coefficient of genetic commonality and in the presence and frequency of alleles from the B-system. For this reason in some cases the expected effectiveness from periodic changes in lines during line-group selection on commodity farms is low. It becomes imperative to improve future plans for selection work in stockbreeding enterprises, to establish specific goals for them regarding the production of bulls whose line, which is used in the given zone, is sufficiently substantiated.

While drawing on the achievements of population genetics and the genetics of immune and biochemical polymorphic systems it is essential to introduce programs of genetic-mathematic and immuno-genetic analyses of pedigree herds. When improving meat breeds we need methods which secure, preserve and develop valuable characteristics, which eliminate inadequacies and which more fully realize genetic possibilities.

Selection programs are differentiated according to goal--developing breeds and new types of animals, improving breeds, or developing meat animals of the industrial type. When developing new types of animals it is essential to consider that the basic variety quality morphological characteristics that developed during the evolutionary process--coloration, form of antlers, type of body structure--would be transmitted most consistently. Characteristics that were acquired as a result of selection and representative productive qualities are inherited more weakly and are characterized by their great instability. If we turn to dairy livestock farming, there live weight and milk yield are selected and developed as a result of purposeful selection work and improvements in the environment. Man is interested in developing these qualities, but from the biological point of view such a development is unnatural for the animal. Consequently, it is essential to have thorough scientific selection methods which will preserve and develop productive qualities in subsequent generations.

Many economically-advantageous features depend on heredity and environment. Genetic factors are the basis for the form and volume of various muscles, the distribution of fat in various fat-deposit areas, the tendency to yield marbled meat, and the thickness of the muscle fibers. A number of characteristics (growth speed, live weight, the development of the rear section of the body) depend on heredity, but some depend more on environmental conditions.

In addition to inheritance another property common to all living things is mutability, which is expressed in various economically-advantageous characteristics and animal productivity in successive generations and between individuals in one generation. Mutability creates material for selection and is one of the factors furthering evolution. Where mutability is reduced to a minimum degeneration sets in. The breeds used in our country are characterized by high mutability in the basic economically-advantageous traits--live weight, milk yield, carcass mass, return on feed. For example, the range of variability in live weight of Charolais primaparas in the herd of the Balashovskaya Experimental Station according to our observations was 446-782 kilograms, at the second calving--428-794 kilograms, and at the third--498-828 kilograms. The value of the average square deviation h^2 was 56, 61 and 55 kilograms respectively and that of the coefficient of mutability in variation C_v was 9.1, 9.2 and 9.3 percent. The range of milk productivity of cows after the third calving (live weight of calves at the age of 8 months) was 204-432 kilograms.

All of this variability provides good material for selection. One of the forms of inherited mutability is combinational, arising with new combinations in the progeny of the inheritable traits of the parents. Breeds are improved on this basis. By utilizing the laws of combinational mutability breeders form new breeds and types of animals. In accordance with the complex plan for selection-breeding work in our country new types of meat cattle are being developed which are adapted to specific natural-climactic conditions. In particular, on the basis of the crossbreeding of the yak with the Kalmytsk breed it is planned to form masses of meat livestock that are adapted to subtaiga and taiga regions of Siberia. For the southern rayons of the country with their dry, hot climate meat livestock is being developed by crossing local breeds with bulls from the Brahman and Brangus breeds. In Uzbekistan a great deal of work has been started on developing a new type of meat cattle using the Santa Gertrudis breed to improve the stock.

Great significance is attached to developing meat animals that are capable of efficiently converting feed while exhibiting intensive growth characteristics. These types of animals can be developed on the basis of inter-species hybridization of cattle and its relatives--the bison and the aurochs. Taking the importance of the problem into consideration, the board of the USSR Ministry of Agriculture examined and approved a broad selection program on hybridization in livestock farming. A new highly productive type of meat cattle is being selected for raising in zones of intensive farming and feed production, such as the Ukraine, Stavropol' and Krasnodarskiy Kray.

Already today many enterprises of the Ukraine are achieving record indicators for meat productivity in cattle. In 1978 livestock farmers of Shpolyanskiy Inter-Farm Enterprise for Livestock Fattening, Cherkasskaya Oblast, sold the state over 7,000 animals with an average weight of 460 kilograms. Here a new type of animal was used which was based on the combined valuable qualities of Chianina, Simmental and Grey Ukrainian and intensive raising and fattening methods were utilized. Over 95 percent of these animals were in the highest nutritive condition and the average daily weight gain was 1,252 grams. Each quintal of weight gain cost 66.87 rubles. In 1978 all of the enterprises of Chernobayevskiy Rayon, Cherkasskaya Oblast, sold cattle weighing an average of 473 kilograms, and seven enterprises produced animals weighing an average of 500 kilograms.

When improving breeds selection programs are built with a view to the genetic structure of the population of animals being improved. The herds of animals are subdivided according to the degree of genetic improvement into several selection levels, following a pyramid principle. In genetic composition and productivity each pyramid has a hierarchical structure. At the top of the pyramid are the herds which are improved "internally," and which are necessary for the improvement of herds that are on lower levels of the pyramid. Concentrated in stockbreeding plants are the most valuable animals of the breed. Here lines are developed and plant types are formed. The products of plants are earmarked primarily for stations for the artificial insemination of animals. Breeding sovkhozes have the function of reproducing the herd of brood cows. According to the complex plan of selection-breeding work it is planned to strengthen the pedigree base with a consideration of the state and future development of meat-breed stock. The Kazakh White-Faced breed is being improved by 53 pedigree stockbreeding enterprises. Of these six are pedigree stockbreeding plants. In the future the number of pedigree plants for livestock of meat breeds will grow significantly.

Native, English, Italian-French and American breeds that are raised here differ considerably in growth intensity, size, nature of fat deposits and rate of maturation. In particular, the large breeds of Italian-French origin of the Charolais and Chianina type are characterized by less intensive fat-deposit processes, abundant muscular development and continuous intensive growth. In comparison with other animal breeds the carcasses of such animals contain less subcutaneous, internal and inter-muscular fat. These traits are extremely heritable, which must be kept in mind when developing new types of animals and when utilizing the genetic potential of these breeds. The coefficient for the heritability of fat content in meat is high and equals h^2=0.76-0.9; the areaof the muscular ocellus, h^2=0.5-0.7. Without differentiated feeding during raising and fattening it is impossible to fully utilize the genetic resources of a breed. Each breed requires the optimal rations, considering the zone where it is raised. The rations are an integral part of a broader circle of technological features which correspond to the breed and which we can refer to as "the technology of the breed."

In commodity meat livestock-farming in addition to traditional breeds the large breeds such as the Italian-French breeds Charolais, Limousin and Chianina should be utilized to create herds. For these breeds intensive growth and insignificant fat deposits are characteristic. At the age of 15 months the calves of such animals are capable of yielding a carcass of 300 kilograms.

There should be a reexamination of the approach to the sale schedule of meat calves, turning the attention of breeders and technologists to the tendency in the practices of our enterprises to sell them prematurely. This doubtless hinders the utilization of the potential of meat animals. Research and practical experience show that from the point of view of economics and the quality of meat products the most justified age to sell calves is probably 15-18 months when their weight has reached 450-500 kilograms, or 550-600 kilograms for calves of specialized meat breeds. And this is not the limit. Most animals of this age group should be fattened until they reach a live weight of 600-700 kilograms.

In utilitarian stock that is used for meat purposes the goal of breeding work is raising productivity and viability of animals and decreasing the cost of beef production. This is achieved not only through pedigree reproduction but through crossing as well--industrial simple crossbreeding, mixed multi-breed and absorptive crossbreeding. In order to avoid mating relatives we need scientifically-based methods for securing sires that will foresee their planned replacement. Herds of brood cows are replenished from among animals of the same age. They are clearly numbered and group selection occurs. Each group is assigned to sires of a single line. This enables us to produce relatively uniform animals, to limit breeding of related animals and to utilize scientifically-based crosses of lines according to selection programs.

Brood cows of the industrial type, like pedigree stock, must have a good reproduction capability, a good milk yield, easy birthing and desireable maternal qualities. It is expedient to develop triple-breed brood-cow herds by including meat and combined breeds in selection. It would be sensible to draw on world experience to develop highly productive meat herds. We know that in the utilitarian herds in the USA are included variants of cross-breeding several British breeds among themselves as well as with the Charolais, Limousin, Simmental, Schwyz and Chianina. Because of the larger milk capacity of the mothers their calves develop intensively, having inherited their high growth energy from large breeds used in crossing as well as as a result of the manifestation of heterosis.

Evaluation of Animals

Selection plays a significant role in improving breeds. Its aim is to select the best animals for extensive use and to eliminate the worst animals from reproduction. Selection must be conducted according to genotype, the animal's own productivity and the productivity of its progeny. Animals with highly productive sires and mothers having high-quality brothers and sisters are more valuable according to genotype than animals with a similar productivity but with lower-quality parents. It is very important to have excellent sires available because they are so valuable for the selected improvement of herds. Bulls with a high reproduction capacity and heritability qualities which are consistently passed on to their progeny can be called prepotent. They usually possess a rich ancestry, phenomenal personal qualities and they yield a progeny of the desired type. The intensive use of the sperm from such sires and from their sons by means of artificial insemination of cows will transform the herd within a short period of time.

Inheritable traits (genotype), no matter how valuable, are not always realized in interation with the environment. For this reason it is very important to know to what degree a system of characteristics and traits of an organism is inherited under specific conditions. This is made evident by an evaluation of the parents concerning the quality of the progeny as manifested in the data on individual traits of their sons and daughters. From the theoretical point of view this is the best selection method because animals demonstrate their capability to pass on valuable traits in practical terms.

In the USSR and other countries it is becoming more common practice to evaluate pedigree bulls according to their own productivity--the rapidity of growth and the return on feed through weight gain. The reliability of such testing arises from the high correlation (0.7-0.9) between the intensity of growth of bulls from meat breeds and the live weight of their progeny at the age of 1.5 years (K. Kharing, 1961; Kh. K. Beyker, 1965; I. Tsipper, 1968). Sires with a high growth intensity produce progeny with the same growth characteristics and a high weight gain. A consideration of the bull's own productivity decreases the likelihood of errors during its selection as pedigree stock. This method is utilized in specialized stations and directly in enterprises in the USA (in 1965 over 35,000 bullcalves were evaluated according to this method), in the GDR, Great Britain, Switzerland, Finland, France and the FRG.

As specialists suppose, it is best to evaluate pedigree bulls in two stages--first according to personal productivity (preliminary) and then (finally) according to progeny. Bullcalves are tested at the age of 8-10 months after they are weaned from their mothers. By this time they are already well-developed (the average daily growth until weaning is no less than 800 grams) and their live weight corresponds to the elite class. The preliminary selection is very important, but by utilizing it alone it is still difficult to judge how well the future sire will be able to transmit his properties to his progeny. The heritability qualities of bulls are evaluated according to the quality of the progeny, comparing it with the progeny of the same age from other parents raised under similar circumstances. The bull's progeny is compared to the breed's standard and the indicators for its daughters are also compared to those of their mothers. The latter variant yields reliable results only if the daughters and mothers were raised and utilized under similar circumstances. The most objective and complete data on bulls can be obtained by raising their progeny in strictly-standardized conditions in special testing stations. This work can be done on farms, but methodology and certain conditions must be strictly maintained.

The evaluation and testing of bulls from meat breeds concerning the quality of progeny proceeds according to the following indicators: the intensity of the growth of the progeny during raising and fattening after weaning at the age of 8-15 months; feed expenditure per 1 kilogram of weight gain during raising and fattening after weaning at the age of 8-15 months; live weight at the age of 15 months; dressed carcass weight; visual evaluation of the meatiness and fat content of the carcass. However, in practice very few bulls are being evaluated according to this method because the testing of bulls for the quality of their progeny is limited primarily by enterprises of scientific-research enterprises. There is an explanation for this--the necessarily strict controls in forming groups, daily calculations of the feeds eaten to determine the return on feed, controlled slaughter which regular enterprises cannot always perform. There are also great difficulties with the slaughter of pedigree calves. Because of the acute shortage of bulls from meat breeds enterprise managers are not willing to grant permission for controlled slaughter of pedigree bullcalves, and the slaughter of the worst bullcalves will only slant the results. For this reason in some cases it is permissable to forego controlled slaughter, but the evaluation will be less universal, thorough and convincing. A solution can be found in the organization of stations for testing bulls on the quality of their progeny. These can be created in pedigree enterprises as well.

In the pedigree stockbreeding enterprises of our country about 250 bulls have been evaluated from meat breeds, two model stations for 100 animals have been constructed and some stations are in the course of construction. The first catalogue of bulls from meat breeds evaluated on personal productivity is being prepared for publication. However, there are many shortcomings in this important matter. The testing of bullcalves for personal productivity is not being stimulated economically, mixed-fodder of a consistent make-up is not rationed, technology is not standardized and even in the leading pedigree stockbreeding plants the number of bullcalves that are tested does not exceed 10-15 percent. Frequently all of this does not permit us to obtain comparative data in order to determine the effectiveness of selection. The work scale does not at all correspond to the great goal that is being put before selection of animals for their intensity of growth.

The methodology for evaluating bulls of meat breeds must be improved. The testing period of the age of 8-15 months is adequate for breeds of English origin (Aberdeen-Angus and Hereford), which are characterized by their rapid maturation and which have basically completed their growth at the age of 15-18 months. For large breeds of Italian and French origin (Charolais, Chianina), which are relatively rapidly maturing physiologically and which are capable of intensive growth for a longer period of time, the traditional testing schedule is inadequate and should be altered to 8-18 months of age.

The herd of brood cows is evaluated according to geneology, live weight, constitution, exterior, milk yield and the quality of progeny. This evaluation should be improved.

According to the instructions on valuation it is fully justifiable to pay a large amount of attention to evaluating the origin, productivity (milk yield) and exterior of the animal. But the cow does not receive special points for reproduction capacity although the cow's coupling schedule and the age at which the calf couples for breeding are taken into account. It is also very desireable to have data on the number of calves a cow produces. In evaluating cows on a complex of traits it is useful to make a correction for their reproductive capability. In determining the pedigree value of cows it is expedient to calculate their productivity on the basis of milk yield and reproduction capacity. In evaluating the fertility of a cow it is desireable to consider its ability to bear a calf yearly, the duration of the service period and the maternal qualities.

Table 4
Reproduction Capability of Cows of Various Breeds

(1) Порода	(2) Голов	(3) Случено голов	(4) Из них в срок		(7) Не случено
			(5) 1 мес после отела	(6) свыше 3 мес после отела	
Герефордская (8)	1 893	1 608	206	105	285
(9) Казахская белоголовая	10 189	8 511	2 098	2 300	1 678
Абердин-ангусская (10)	1 984	1 624	137	1 128	360
Шароле (11)	186	155	—	110	31
Шортгорнская (12)	1 403	1 229	120	287	174
Калмыцкая (13)	3 958	3 701	304	2 774	257
Всего (гол.) (14)	19 613	16 828	2 965	6 995	2 786
%	100.0	85.8	15.1	35.7	14.2

Key to Table 4:

1. Breed	8. Hereford
2. Number of animals	9. Kazakh White-Faced
3. Number coupled for breeding	10. Aberdeen-Angus
4. Of these in the period	11. Charolais
5. 1 month after calving	12. Shorthorn
6. Over 3 months after calving	13. Kalmytsk
7. Not coupled for breeding	14. Total (heads)

According to the opinion of VASKhNIL [All-Union Lenin Academy of Agricultural Sciences] academician V. K. Milovanov, the frequent repeated rutting of cows, resulting in the fact that entire groups of animals are classified in the section for those difficult of fertilize or even "problematic" cannot be explained only by disease, functional or endocrinological disorders or improper feeding and insemination (Tables 4, 5). A number of scientists, and in particular the American specialist L. E. Kesida, feel that the difficulty in making some cows fertile is inherited. It has been noted that cows which become fertilized after the first insemination usually produce daughters which become fertilized just as easily. From this the conclusion has been drawn that one of the important ways to raise fertility in cows is the organization of selection work through stations of artificial insemination--the selection and extensive use of bulls and lines of bulls which produce highly productive daughters. Variations between lines of bulls regarding the fertility of daughters is from 33 to 94 percent.

Table 5
Reproduction Capability of Heifers

(1) Порода	Голов случного возраста (2)	(3) Из них случено в возрасте					(4) Не случено	
		до 18 мес (5)	18—20 мес (6)	20—22 мес (6)	22—24 мес (6)	24 мес и старше (7)	22—24 мес (6)	старше 24 мес (8)
Герефордская (9)	852	316	147	87	43	186	72	29
(10) Казахская белоголовая	2328	623	589	566	323	78	127	
Абердин-ангусская (11)	598	24	56	60	93	283	54	57
Шароле (12)	36	—	5	8	10	7	1	2
Шортгорнская (13)	1312	36	250	235	426	365	—	—
Калмыцкая (14)	1529			130	360	793		246
Всего (гол.) (15)	6755	999	1092	1086	1255	1712	254	334
(%)	100.0	14.8	16.5	16.1	18.6	23.3	3.8	4.9

Key to Table 5:

1. Breed	8. Over 24 months
2. Number of animals of reproductive age	9. Hereford
3. Of these, coupled at the age of	10. Kazakh White-Faced
4. Not coupled for breeding	11. Aberdeen-Angus
5. Up to 18 months	12. Charolais
6. Months	13. Shorthorn
7. 24 Months and older	14. Kalmytsk
	15. Total (heads)

The valuation catalogue (description of cows) includes over 50 indicators for each animal. Of course it gives a sufficiently-complete description, but is it necessary to list all measurements, points of body structure and many other indicators each year? This detailed data can be entered during the initial period when the animal enters its reproductive phase, at maturation and with the approval of new lines and types. The work of the selection worker must be freed from detail and modernized. During complex evaluations of animals annually a limited number of primary indicators should be utilized, thus enabling workers to process pedigree documentation using electronic computers.

Organizational Principles of Management

In order to improve the management of pedigree stockbreeding the All-Union Scientific-Production Association on Pedigree Stockbreeding in Livestock Farming has been created, as have selection centers attached to leading scientific institutions that are involved in selection in meat livestock farming. In the All-Union NII [Scientific-Research Institute] of Meat Livestock Farming there has been the formation of the Head Selection Center on Improving Meat Cattle Breeds; in the Kalmytsk NIIMS [Scientific-Research Institute of Meat Livestock Farming]--a selection center for the Kalmytsk breed; in the Kazakh NIIZh [Scientific-Research Institute of Animal Farming]--a selection center for the Hereford breed; and in the Ukrainian NIIZh--a selection center for the Charolais and Chianina breeds. The Head Selection-Genetic Center has been created as part of the All-Union

Scientific-Production Association for the purpose of managing selection centers. It is planned to reexamine the planning principles of research operations on selection problems. On the basis of production requests and in accordance with a forward-looking complex plan of selection-pedigree work, agricultural organs prepare tasks for scientific-research institutions on creating new breeds, types, hybrids and lines and on improving breeds and selection methods. A higher selection-genetic school has been created in the All-Union Scientific-Production Association on Stockbreeding in Livestock Farming in order to prepare cadres for selection centers. Nevertheless, the various departmental subordinations of pedigree enterprises are making it difficult to organize a solid system of management for pedigree work. The pedigree enterprises operate according to plans that are written by organizations financing them. For this reason the enterprises are overloaded with production plans for various products uncharacteristic of them. The organs of the pedigree service have only a methodological management of breeding enterprises and sometimes do not have the power to act effectively on production planning, the relationship between branches and on observing recommendations on breeding operations. There are objective reasons for the various departmental subordinations of pedigree breeding enterprises. The proportion of production costs in pedigree stockbreeding within the total costs incurred by a production enterprise are frequently low and frequently the farm has developed beet-farming, cotton-farming or some other branch to a high degree. Apparently, in pedigree stockbreeding enterprises it is essential to increase the volume of production of pedigree stock in order to make this branch the leading branch within the enterprise.

The Development of Scientific Research

During the last 15 years more research has been done on improving meat breeds and on creating new lines, types and breeds. New scientific institutions have been organized, departments have been strengthened in head, republic and zonal institutes that deal with the problems of meat livestock farming. New plant lines within the Kazakh White-Faced, Hereford, and Aberdeen-Angus breeds have been introduced and confirmed. A new type of Aberdeen-Angus stock has been developed. There has been an elaboration of a methodology for two-stage evaluations of bull sires, of recommendations on pedigree work with meat breeds and on the technology of producing beef. At the same time much of the work to improve and develop new breeds in meat livestock farming was not specific enough in nature, too prolonged and insufficiently complex. Many topical questions on improving methods of evaluating animals, on the forms of zootechnical calculations and on the use of electronic computers to process pedigree documentation are practically not reflected in the thematics of institutes. We must increase research on developing new, more effective methods of selection, on enriching the gene pool, on making standards more precise and on breed regionalization. It is necessary to activate the design and introduction into mass production of the newest equipment, instruments and other technical means that are necessary for selection work. We need scientifically-based proposals on the development and distribution of meat livestock farming according to zones, including those for breeding purposes, on the creation of a pedigree base, on accelerated reproduction, on progressive technology for pedigree stockbreeding and on well-based sytems for organizing production and labor. All of this will help us to create a branch of livestock farming for meat purposes in this country more rapidly.

COPYRIGHT: Izdatel'stvo "Kolos", "Vestnik sel'skokhozyaystvennoy nauki", 1979

8228
CSO: 1824

METHODS FOR INCREASING THE OUTPUT OF LIVESTOCK PRODUCTS

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 11, Nov 79 pp 88-92

[Article by A. Yakushev, branch chief of Gosplan USSR: "Fuller Utilization of Untapped Resources for Increasing Output of Livestock Products"]

[Text] In his speech at the pre-election meeting of the electors of the Baumanskiy electoral district in Moscow on 2 March 79, L.I. Brezhnev, while pointing out the clear need for proportional development of all branches and sections of the agricultural-industrial complex, particularly emphasized the importance of the development of agriculture as the component which is called upon to provide the country with raw materials and food.

In recent years a number of important economic and organizational and technical measures for hastening the development of agricultural production has been developed and implemented by the party and the governemnt. As a result, the production of grain, vegetables, meat, milk, eggs and other products has grown, and the consumption of the most valuable food products is also growing. While in 1970 the consumption of meat and meat products per person amounted to 48 kilograms, the amount in 1978 was 57 kilograms; the consumption of milk was 307 and 321 kilograms respectively and that of eggs 159 and 230 per person. However, in spite of these accomplishments, the demands of the population for livestock products are still not being fully satisfied.

One of the primary indicators of the intensiveness of animal husbandry is its productivity. An analysis of the growth in productivity of meat, milk, eggs and wool shows that in 1978 approximately one fourth of the growth in livestock production on kolkhozes, sovkhozes and other state farms was a result of this factor , when compared with the 1970 level, and the remaining portion of the growth was due to an increase in the livestock and poultry population.

Moreover, many farms make inadequate use of the possibilities for increasing meat production by increasing productivity through intensification of breeding and feeding young stock. Thus, instead of the 270 to [illegible] days needed under normal conditions for feeding and maintenance, the length of time for breeding and feeding pigs on the kolkhozes, sovkhozes and other state farms of the

Ukrainian SSR in 1977 was approximately 500 days, for the Kazakhskaya SSR it was 446 days and for the Turkmenskaya SSR it was 435 days. For each head of cattle which they had at the beginning of the year, the farms of the Azerbaijan SSR produced (grew) 56 kilograms of meat (in live weight), in the Georgian SSR 51 kilograms each, and in the Turkmen SSR 69 kilograms each as opposed to 142 kilograms in the Estonian SSR and 144 kilograms in the Latvian SSR.

The milk productivity of dairy cattle is slowly growing. In 1977 the milk yield from each cow on the kolkhozes and goskhozes reached 2,445 kilograms, but in 1978 productivity fell.

In recent years significant growth has been achieved in cattle and poultry populations. In 1978 success was achieved not only in replenishing the population of hogs which had been reduced in 1975 due to unfavorable weather conditions, but also this indicator surpassed the maximum level of 1974.

At the present time the determining factor in the growth in production of livestock products is the increase in productivity of livestock poultry. The practical experience of the leading farms and the indicators of the individual branches which have begun the process of intensification bear witness to this fact. Thus, the hog population on the sovkhozes, kolkhozes and other state farms for the period from 1 January 1962 through 1 January 1979 increased from 49.4 million to 58.7 million head, or an increase of 18.8 percent, and the production (the product of breeding) of meat in live weight rose from 3,046,000 to 4,576,000 tons, or an increase of 50 percent. Meanwhile, the general expenditure of feed in hog raising remained the same, namely, 39 million feed units; however, the proportion of multicomponent feed increased by a factor of 2.3. Due to improved balance in the feed allowances, the expenditure of feed for the production of 1 quintal of pork was reduced from 13.56 to 8.7 feed units, or by 36 percent.

An example of growth in production due to intensive factors is our country's poultry husbandry. As is well known, during recent years significant measures have been implemented for transferring this branch to an industrial basis. The great majority of eggs and poultry meat is produced today by poultry factories which utilize the most modern equipment and which provide a relatively high level of poultry feeding. On the kolkhozes and sovkhozes for the period 1962 to 1978, the population of mature poultry grew by a factor of 2 and the production of eggs by a factor of 5.9 while the expenditure of feed grew by a factor of 2.1, which included a growth in the use of mixed feed by a factor of 10, the cost of feed for the production of 1,000 eggs was reduced by a factor of almost 4.

The proportion of concentrated feed is increasing in the total expenditure of feed for animal husbandry. However, a large amount of grain is still fed to livestock in an unconcentrated form which sharply reduces the effectiveness of the utilization of both concentrated and other forms of feed. The lack of protein feed is felt particularly in livestock productivity. Approximately one half of the mixed feeds produced in state industrial enterprises and on the kolkhozes and sovkhozes on the basis of protein and vitamin additives are manufactured according to provisional recipes and without the necessary enrichment with protein components.

In relation to this, it was decided at the July (1978) Plenum of the CPSU Central Committee to "devote particular attention to solving the problem of feed protein primarily through increasing the production of pulse crops, soybeans, alfalfa, clover, rape and other high-protein crops; to expand more quickly the capacities and to increase the production of mixed feed at state and interfarm enterprises; to provide that in the next five-year plan practically all grain which goes for livestock needs will be fed in a processed and balanced form; and to develop the production of feed yeasts, fish and meat and bone meal, whole milk substitutes, and mineral and other industrial feed additives."*

Both at the present time and in the future the primary source of protein for animals will be plant feeds. Particular attention should be devoted to the cultivation of high-protein crops which are necessary in mixed feed. It must be pointed out that the kolkhozes and sovkhozes have unjustifiably reduced the production of such a valuable crop as peas. While in 1965 2.2 million tons of peas were used in mixed feed, in 1978 only approximately 0.5 tons of peas were utilized, yet the total production of mixed feed increased by a factor of more than 3.

Further intensification of animal husbandry, particularly poultry and hog raising, is impossible without the all-out utilization of industrially manufactured protein feed. The production and supply of this feed and amino acids for animal-husbandry needs is carried out by the enterprises of a number of branches of industry: the microbiological (feed yeasts, lysine, and other protein additives), the food (mill cakes and oil cakes, feed yeasts, and amino-mineral pulp), the fish (fish meal), the meat and dairy (meat and bone meal, dry milk), the cellulose and paper (feed yeasts), the chemical (methionine) as well as the enterprises of the USSR Ministry of Procurement (carbamide concentrate).

The production of fish and meat and bone meal in the future will depend on the availability of raw material resources. The production of mill cakes and oil cakes is determined by the harvest levels of the seeds of oil-yielding crops and of cotton.

Increases in the volume of microbiological synthesis of feed protein and expansion of the use of carbamide concentrate for ruminant animals along with the growth in the production of pulse crops and soybeans will make it possible to compensate for the shortage in protein additives in the future. According to the data of N.A. Shmanenkov, academician of the All-Union Academy of Agricultural Sciences imeni V.I. Lenin, ruminant animals can exhibit normal vital activity when provided with 100 percent of their protein needs from non-protein sources of nitrogen (carbamide). In experiments conducted on sheep and goats, positive results were obtained through complete substitution of natural protein with carbamide and ammonium salts.*

---

* L.I. Brezhnev. On further Development of USSR Agriculture. M., Politizdat, 1978, p 58.

An important source for supplementing the supplies of high-protein feed from animal derivation is manufactured meat and bone meal made from inedible raw materials, namely, the by-products of tanning supply enterprises, rural slaughter-houses and minor meat processing enterprises. Up to 200 kilograms of meat and bone meal is derived from 1 ton of such raw materials.

During the 9th Five-Year Plan the USSR Ministry of Agriculture began the construction of veterinary health plants for processing inedible raw materials, the primary purpose of which was to improve the health conditions of animal husbandry centers, farms and poultry factories and to provide preventive measures against contagious animal diseases. The Main Administration for the Construction and Utilization of Plants for the Production of Meat and Bone Meal was organized for managing the activities of these plants. At the present time there are 60 such plants in operation in the country. During the period 1976-1978 they processed 300,000 tons of inedible raw materials, and 60,000 tons of meat and bone meal were produced. In accordance with their assigned task, these plants must process 35,000 tons in 1979 and 47,000 tons of meat and bone meal in 1980. However, even at that, only about 25 percent of the available raw materials will be utilized. Therefore, in addition to the construction of new plants, the problems of gathering, storing and transporting the raw materials must be solved.

An increase in the production of feed with high levels of protein cannot fully solve the problem of protein nutrition for agricultural animals. Besides the level of protein content, the amount of amino acids in the feed allowance is of great importance. Scientific research has shown that in the most widespread natural feeds the amount of amino acids, primarily lysine and methionine, is insufficient in a majority of cases. It has been established that the addition of 0.14 percent of lysine to the feed of young pigs and of 0.5 percent to the feed of chicks permits a reduction in the amount of protein used of 23 to 25 percent, a decrease in the amount of feed used of 10 percent and an increase in the productivity of the animals of 10 to 11 percent. Moreover, the enterprises of the Main Administration of the Microbiological Industry are meeting the needs of animal husbandry for lysine at a rate of less than half. Also, the lysine produced at the present time, as a result of the low concentration of active substances and its great hygroscopicity, is poorly suited for the production of mixed feed.

The presence in feed of vitamins, particularly A, D and E, influences the increase in productivity and fertility of animals. Underestimation of their role can lead to important losses to animal husbandry. Therefore, in addition to accumulating them in plant feed, it is necessary to increase the industrial production of vitamins primarily for use as a mixed feed component.

---

* See: ZHIVOTNOVODSTVO, No 3, 1979, pp 67-68

The needs of animal husbandry for mineral substances are not always satisfied. It has been established through research by the Central Scientific Research Institute for Agricultural Chemical Service (TsINAO) that in many regions of the country animals experience a phosphorous deficiency. According to the data of VASKLNIL academician M. Solentsev, the total phosphorous deficiency in the primary feed throughout the country amounts to 20 to 30 percent. Because of this, the majority of farms do not achieve a significant quantity of milk and meat and utilize too much feed per unit of production.*

The shortage in mineral substances for animals can be compensated for by means of chemical feed additives. However, from year to year the chemical industry enterprises do not fulfill the plan for the delivery of these additives to agriculture. In 1978 alone the shortage in planned supplies of mineral additives for animal husbandry exceeded 1.2 million tons.

In posing the problem of increasing the production of livestock products, it is necessary to also search for ways to use them more effectively in human nourishment. Until now a significant amount of whole milk has been used for feeding young agricultural animals. In 1978 more than 12 percent of the total milk production was used for this purpose. If one takes into account the use of skim milk (skim milk, buttermilk and whey), then it turns out that up to 40 percent of milk protein is used for feed purposes.

Such inefficient use of milk protein is the result of the seasonal production of milk (from May through September, 1.5 to 2 times more skim milk is returned to the farms than they need) as well as due to the inadequate production base for skim milk, buttermilk and whey.

Foreign and domestic experience has shown that the most efficient method of saving whole milk and skim milk for their utilization for nutritive purposes is the widespread use of whole milk substitutes (ZTsM), particularly the regenerated type, for raising young cattle, pigs and sheep. At the same time it is necessary to increase the production of special mixed feed for calves and young pigs at the enterprises of the USSR Ministry of Procurement.

The industrial production of whole milk substitutes in our country began to develop only in the 9th Five-Year Plan. In comparison with 1975, the production of whole milk substitutes in 1978 grew by a factor of 1.8. Each ton of whole milk substitutes replaces and frees 8 tons of whole milk for commercial purposes. According to calculations of the USSR Ministry of Agriculture, the demand for whole milk substitutes for animal husbandry needs is approximately 1 million tons.

The present formulas for whole milk substitutes stipulate the addition of up to 80 percent dry skim milk, 15 percent plant and animal fat as well as mineral and other biologically active substances and vitamins. Scientific research institutions for animal husbandry must expand their research taking into account available raw materials and world experience in the development of formulas for whole milk substitutes on a non-dairy basis or with minimal addition of dry skim milk.

---

* See ZHIVOTNOVODSTVO, No 11, 1978, pp 15-16

The problem of increasing the productivity of whole milk substitutes, particularly of the regenerated type, as well as special mixed feed for young animals must be solved through the combined efforts of the USSR Ministry of the Meat and Dairy Industry, the USSR Ministry of Agriculture and the USSR Ministry of Procurement. The situation should not exist in which, during the winter and spring period, it is impossible to make full use of the capacities of the meat and dairy industry enterprises for dry skim milk because the kolkhozes and sovkhozes are reluctantly reducing the level skim milk recovery and in which, during the summer and fall period, the enterprises cannot fully process all the raw material received.

A large portion of the protein feed from animal sources is required in the production of special mixed feed for calves and young pigs. To prevent a reduction in the quality of other mixed feed, it is necessary to significantly increase the delivery of high protein components to the mixed feed industry.

The successful fulfillment of the program for the development of animal husbandry, both in the current year and in 1980, the concluding year of the 10th Five-Year Plan, is being determined to a large degree by how the kolkhozes and sovkhozes prepare for the 1979-1980 wintering of livestock. Facing the local agricultural organs, managers and kolkhoz and sovkhoz specialists and workers is the complex task of maximally utilizing the existing resources for improving feed preservation and of adding the secondary raw materials of plant growing and the by-products from the food, meat and dairy and other branches of industry to the feed resources.

The personal, auxiliary farms of kolkhoz members, workers, employees and other citizens have great possibilities for increasing livestock production at their disposal. The party and government devote daily attention to stimulating the development of animal husbandry in this area of the economy. It is sufficient to say that in 1978 the population was sold 12.6 million head of young pigs, 532 million young poultry and nearly 3 million tons of mixed feed. Further measures have also been planned for providing assistance in supplying feed to the population's livestock.

An important contribution to raising the productivity of livestock products can and must be made by the subsidiary farms of enterprises, organizations and institutions. They are called upon to develop animal husbandry through more effective utilization of the land assigned to them, through complete utilization of the waste products from industry which processes agricultural products, and so on. A number of subsidiary farms of the USSR Ministry of the Food Industry and of the USSR Ministry of the Meat and Dairy Industry are achieving good results. However, several ministries and departments (the USSR Ministry of Agricultural Construction, the Ministry of Railroads, and others), in creating subsidiary agricultural enterprises, are counting on receiving feed from state resources but are not creating their own feed base. Such a position does not answer the problems facing the subsidiary agricultural industrial enterprises.

In recent years the development of the country's animal husbandry has followed the path of industrialization. The advantages of large animal husbandry centers and poultry factories are evident. However, inasmuch as 90 percent of livestock production in the public sector takes place on existing farms, kolkhozes and sovkhozes, the primary sources of products, it is necessary to devote more attention to their supplies of materials and equipment. Nevertheless, the overall mechanization of the labor intensive processes on the farms is moving at an unacceptably slow rate. For example, the mechanization of milking reached 88 percent, of watering - 86 percent, of feed distribution - 39 percent, manure removal - 69 percent, and overall mechanization reached only 36 percent for the total population of cattle on the kolkhozes, sovkhozes and interfarm enterprises. The mechanization of individual production processes eases the labor of animal husbandry workers but does not guarantee a significant growth in the productivity of labor.

At the present time successful development of animal husbandry is occurring only in close cooperation with the corresponding branches of industry. Only total solution of the problems connected with animal husbandry will permit a significant increase in the production of meat, milk, eggs and other products, which, in our view, must be reflected in the plans for the 11th Five-Year Plan and for the more distant future.

COPYRIGHT: Izdatel'stvo "Ekonomika", "Planovoye khozyaystvo", 1979

11,220
CSO: 1824

DNEPROPETROVSKAYA OBLAST PREPARES FOR WINTER MAINTENANCE OF LIVESTOCK

[Editorial Report] In Kiev PRAVDA UKRAINY on 16 Nov 79 p 1 an article appears giving an interesting portrayal of pre-winter preparations for livestock maintenance in Dnepropetrovskaya Oblast. The article begins with the announced goal:

"Not only to maintain the number of head of cattle but also to permit no drop in productivity, in spite of difficulties brought about by weather conditions...." The livestockmen here are announcing their initiative "on the eve of this year's complicated winter." The article goes on to state that the cattle herd numbers are the highest they have been in recent years and provides the number of head increase over last year for the herd overall and for dairy cattle.

Steps are announced to feed the livestock in the socialist sector herd. In addition to the necessary feed rural workers have layed in 60,000 tons of sunflower caps. In accordance with scientists' recommendations they have ensiled 200,000 tons of straw and 320,000 tons of beet tops. Corn stalks are not being utilized in the usual manner, i.e. in the dry form, but rather stored in silos to increase the supply of succulent feed. In order to guarantee fall and early spring pasturing, significantly more winter rye has been planted then last year.

CSO: 1824

CONCERN FOR ABUNDANCE OF LIVESTOCK FEED IN THE UKRAINE

[Editorial Report] Kiev PRAVDA UKRAINY in Russian 27 Dec 79 p 1, December newspapers from Kiev reveal concern continuing over the level of livestock feed supplies in the Ukraine. Feed supplies had been less than abundant at least since the summer of 1979. Concern has continued into the late fall and winter. Reports as early as the late spring and continuing through the summer mentioned special measures being taken and praise those who undertook them to augment feed supplies. In September a Ukrainian Central Committee journal in a general agricultural review reported that concern for feed had a special urgency this year.

"Adverse weather forced substantial adjustments in the feed production plans of many farms. It demanded the making of new organizational decisions, the mobilization of additional untapped resources. And workers in the countryside under the leadership of party organizations are doing everything possible in order to augment feed supplies by gathering grasses in the forests, ravines, swamps and other wastelands, the procurement of twigs for feed, meal from pine cones, and the expansion of stubble crops." (Kiev POD ZNAMENEM LENINIZMA No 17, Sep 79 p 50)

A mid-November edition publishes a 1,200 word general review of stall maintenance of livestock in the kolkhozes and sovkhozes of the Ukraine. In a paragraph reminiscent of the one noted above the review reports that:

"This year has turned out very unfavorably for agriculture. The cold delayed spring and hot dry summer led to a short fall in the grain harvest and had affected feed crop yields."

The review then goes on to urge adoption of a variety of proposals to encourage thorough, high quality workmanship and quality control over and review of the work. (Kiev PRAVDA UKRAINY 15 Nov 79 p 1)

An early December editorial notes once more that many farms fell short in their grain and feed harvests due to the bad weather conditions in the past spring and summer. The editorial goes on to stress that farms have made it through the winter on a limited supply of feed and can again if they utilize feed supplies cautiously and thriftily. (Kiev PRAVDA UKRAINY 6 Dec 79 p 1)

A late December edition publishes a Ukrainean Central Committee resolution reviewing the work being done by party organizations and government and economic organs of Vinnitskaya Oblast to increase production and improve quality of livestock feed. The Resolution begins by noting progress made in moving feed production onto an industrial basis, then notes a variety of material and moral incentives available to those who perform well on this front. The Resolution goes on to project further development and progress to be made in strengthening feed production in the 1980-85 timeframe and outlines 1985 goals. The Resolution assigns responsibility to the southern department of VASKhNIL and various government bodies for bringing this about.

COPYRIGHT: Izdatel'stvo "Radyans'ka Ukraina" "Pod Znamenem Leninizma", 1979

CSO: 1824

BELORUSSIAN NEWSPAPER ADDRESSES FEED QUALITY PROBLEMS

[Editorial Report] Minsk SEL'SKAYA GAZETA in Russian 8 Jan 80 p 2, an early January newspaper from Belorussia is interesting for its reference to the protein deficit in livestock feed. This subject had been broached also in a late December newspaper from the Ukraine. (See PRAVDA UKRAINY 28 Dec 79 p 3, reported in 1824/110, dated 21 Jan 80)

The 1,200 word article entitled "Augmenters of Protein" begins by admitting that there is a deficit of feed protein and phosphorous every year, but....

"During the current stall maintenance period it is especially noticeable. This has been caused by a shortfall in feeds, especially concentrates. And if in feeding meat cattle there is a 20-25 percent lack of the abovementioned nutrient matter then losses in meat and milk will amount to 15-20 percent."

The remainder of the article goes on to give rather highly technical instructions for compensating for the missing protein by enriching feed with nitrogenous compounds, primarily urea. The article concludes by stating that the correct utilization of each kilogram of urea guarantees the obtaining additionally of about 10 kilos of milk and 2 kilos of body weight in meat cattle; a kilo and a half of body weight and up to 150 grams of wool in sheep.

CSO: 1824

UKRAINIAN NEWSPAPER EXPRESSES ANXIETY FOR FEED QUALITY

[Editorial Report] Kiev PRAVDA UKRAINY in Russian 25 Dec 79 p 3, a late December article points up the presence of shortfalls in the work of several specialized livestock fattening enterprises in Nikolayevskaya Oblast. The article notes that despite the difficult summer field workers managed to lay in amounts of feed in excess of the overall average for the Ukraine and yet weight gains for cattle in Nikolayevskaya Oblast for November were below the republic average by about 25 percent. The problem here is quality as much as quantity--specifically a lack of protein. There are two successful enterprises in Nikolayevskaya Oblast producing the necessary ingredients but organization and distribution problems keep the production from getting to the cattle, resulting in the delivery of underweight animals. Party organizations, local soviets and agricultural organs are called upon to devote serious attention to this situation.

CSO: 1824

NEWSPAPERS IN BELORUSSIA CRITICIZE POOR WORK OF LIVESTOCKMEN

[Editorial Report] During the summer of 1979 newspapers in Belorussia gave ample evidence of problems encountered in gathering enough feed for livestock and detailed special measures undertaken to cope with this problem. Concern has continued into the late fall and winter. A mid-November newspaper publishes an 1,800 word article from Vitebskaya Oblast by L. Makarenko entitled "For Feed or Into the Bonfire?". The author begins by making the point that as of 6 November the lumbermen of Vitebskaya Oblast should have provided 14,300 tons of dehydrated feed but in fact provided only 3,650 tons. The oblast with the most voluminous assignment and supplies of raw material had the worst record of all the oblasts in Belorussia. The article concludes by pointing out,

"....that under this year's conditions, when kolkhozes and sovkhozes are experiencing a sharp lack of concentrated feed, the increase in production of vitamin meal, primarily from raw material procured on non-agricultural lands should become an important auxiliary source." In between the article points out local examples of waste of raw material which should go for livestock feed. (Minsk SOVETSKAYA BELORUSSIA in Russian 17 Nov 79 p 2)

An early December cartoon in an agricultural newspaper shows three perplexed cattlemen puzzling over what to do with the farm's several hundred pounds of feed in the form of one gigantic beet. The accompanying note points out that at several enterprises they are giving the cattle root crops and other feed in an unsuitable form. (Minsk SEL'SKAYA GAZETA in Russian 5 Dec 79 p 4)

КОРОВАМ НА ЗУБОК..

A newspaper a few days later carries a report of a Belorussian Central Committee review and discussion of livestock work there entitled "On serious shortcomings in the organization of the wintering of cattle and unsatisfactory fulfillment of tasks in the production and procurement of milk and meat." The report singles out several enterprise and rayon leaders, who "under this year's extraordinarily complicated circumstances are acting without proper exertion of effort, tolerating negligence, permitting major shortcomings in the organization of stall maintenance of livestock and doing little for rational utilization of feed. They permitted a significant drop to last year's level in dairy production and cattle productivity, did not take decisive measures for the fulfillment of plans and tasks for sales to the state of livestock produce or for the increase in the procurement of milk from the population."

Penalties range from stern reprimands being read into the records to threats of dismissal to at least one case of a stern reprimand accompanied by dismissal. The obkoms, oblispolkoms and several ministries will report on their progress in fulfilling the Central Committee instruction on this matter on 1 February and 1 May 1980. The agricultural section of the Central Committee will oversee the fulfillment of this instruction. (Minsk SEL'SKAYA GAZETA in Russian 9 Dec 79 p 1)

A late December review begins by pointing out that for the first 11 months of 1979 only four of 117 rayons have fulfilled their milk procurement plans for the year while 73 rayons have not yet attained procurement levels for dairy products equal to those of 1978. The primary problem is the low productivity of the dairy herd. This is traced back to the fact that during the entire year problems of feeding and maintenance of the dairy herd were solved very unsatisfactorily in places. "To this day a large number of enterprises are continuing to provide feed in an unsuitable form, without regard for the production potential of each group of cows."

The review offers one example of good and several examples of bad feed utilization.

"The situation urgently demands thrifty utilization of feed, cutting use of milk for intra-enterprise needs, increasing its marketability and improving the organization of milk procurement from the population."

"Nor is everything turning out well in meat production and procurement."

"It is unacceptable that not one oblast has attained the planned weight increases in the fattening of neat cattle and swine....A particularly noticeable weight drop has been permitted at enterprises in Minskaya Oblast."

The review concludes by calling upon leaders and specialists and all who work in livestock raising to work diligently for the favorable outcome of the winter maintenance of cattle and to increase the productivity of the meat and dairy herds. (Minsk SEL'SKAYA GAZETA in Russian 22 Dec 79 p 2)

Most recent is a short early January report from Minskiy Rayon by A. Yakovlev. The report is reminiscent of the mid-November article cited earlier, complaining that valuable raw material, which has the potential to help feed livestock is going into the bonfire. (Minsk SEL'SKAYA GAZETA in Russian 5 Jan 80 p 2)

The same edition carries another cartoon, which would seem to indicate a certain discontent with the complacent attitude on the part of those charged with feeding and maintaining the cattle.

(1) — КАК СБАЛАНСИРУЕМ РАЦИОН!

(2) — ВАЛЯЙ ПО СПРАВОЧНИКУ, ТАМ РАЗБЕРЕМСЯ...

Key:

1. How are we going to make up the ration?
2. Go check the handbook, then we'll figure it out.

(Minsk SEL'SKAYA GAZETA in Russian [illegible] p 1)

CSO: 1824

INCREASED RYE SOWINGS IN RSFSR

Moscow SEL'SKAYA ZHIZN' in Russian 9 Aug 79 p 2

[Comment by RSFSR deputy agriculture minister]

[Text] N. Pospelov, deputy minister of agriculture of the RSFSR, commented apropos the article "The Rye Field" which was published on 23 June:

"Measures have been formulated for expanding the area sown to rye to 8 million hectares. Of these, the non-Chernozem area will account for half, and Kirovskaya Oblast, which was the area in question, in the main, in the article, will account for 576,000 hectares. Currently more than half of the winter crops here are accommodated in clean fallow."

A report on concrete measures to increase rye production was given by Kirovskiy Obkom Secretary K. Vorob'yev.

8850
CSO: 1824

SOYBEANS PLANTED IN VOLGOGRADSKAYA OBLAST FOR FIRST TIME

Moscow IZVESTIYA in Russian 29 Dec 79 p 1

[Report by F. Kozlovtsev, deputy chief of the Volgogradskaya Oblast Agricultural Production Administration: "December Concerns"]

[Text] Volgogradskaya Oblast--Comrade L.I. Brezhnev's words about increasing exactingness with respect to the rational use of resources and equipment and about insuring that the strengthening of the material-technical base in the countryside be reflected more palpably in the level of the country's provision with foodstuffs are meeting with a warm response among rural workers.

The final year of the 10th Five-Year Plan is approaching. Having attentively studied Leonid Il'ich Brezhnev's speech at the CPSU Central Committee November (1979) Plenum and the material of the USSR Supreme Soviet session, the oblast's agricultural specialists, kolkhoz members and sovkhoz workers are seeking out possibilities of increasing in the yield of all agricultural crops in order to conclude the 10th Five-Year Plan with honor. Some 1.2 million hectares of winter crops--300,000 hectares more than last year--have been sown for the 1980 harvest. Of these, approximately 327,000 hectares are accommodated in clean fallow.

Some 1.6 million tons of organic fertilizer--somewhat more than last year--have been applied to the winter crops. The top-dressing of the sown areas has been carried out. Snow will be retained over the entire winter crop area.

We are paying particular attention to seeds. As of now 490,000 tons of cereal seeds, 376,000 tons of which are of first and second grades, have been prepared for next year's harvest. All the oblast's farms have been fully supplied with annual and perennial grass seeds.

Displaying concern for the comprehensive strengthening of the fodder base, the farmers have on this occasion laid in a large quantity of seeds of sorghum and a crop which is new for our area--soybean. It has been assigned 4,000 hectares.

The repair of tractors and other agricultural machinery is being carried out successfully. This work is being performed in organized fashion on all of the oblast's farms. Competition among all rural workers to worthily commemorate the 110th anniversary of V. I. Lenin's birth has developed following the initiative of the Kolkhoz imeni Lenin in Leninskiy Rayon.

8850
CSO: 1824

FALL SOWING LAGS IN ARMENIA

Yerevan KOMMUNIST in Russian 21 Dec 79 p 1

[Report on field operations in Armenia]

[Excerpt] According to the latest figures of the Armenian SSR Central Statistical Administration, fall sowing in the republic has been carried out over 75,314 hectares, and the late-fall plowing has been performed over 45,048 hectares. This is 4,000 and 3,200 hectares respectively less than in the same period last year.

The pace of the fall sowing is particularly slow in Aparanskiy, Artikskiy, Gukasyanskiy, Vardenisskiy, Martuninskiy, Spitakskiy, Stepanavanskiy and Tumanyanskiy rayons.

Due attention is still not being paid to such an important agrotechnical measure as the lifting of the fall fallow, yet a big harvest of spring crops is largely conditioned by the successful performance of this work.

It is particularly worrying that at the time of the mass fall sowing work on the selection and cleaning of cereal seeds has not yet been completed. Of the planned 28,271 tons, 26,558 tons of winter crop seeds have been selected and certified.

The priority task of the rayon party and soviet organizations, agricultural organs and farm leaders is to extensively deploy work on the fall sowing and fall plowing and insure the accumulation of seeds both for the winter and spring sowing, bringing them up to standard condition, within a short time.

8850
CSO: 1824

DEVELOPMENT OF RICE CROP IN KARA-KALPAK ASSR

Tashkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA in Russian No 10, Oct 79 pp 38-40

[Article by D. Plavanov, chief of the territorial administration of Karakalpakirsovkhozstroy: "Virgin Rice Land in the Aral Lowland"]

[Text] Implementing the decisions of the 25th party congress and subsequent plenums of the CPSU Central Committee, the collective of many thousands of workers of the Karakalpakirsovkhozstroy Administration is consistently waging a struggle for efficient utilization of fixed production capital, the achievement of greater labor productivity and improvement of the quality of all work.

During 3 years of the Tenth Five-Year Plan, thanks to daily assistance from the party and government, collectives of construction, installation and specialized organizations of the administration assimilated 148,056,000 rubles' worth of capital investments and fulfilled 128,021,000 rubles' worth of contract work. It put into operation 21,024 hectares of irrigated land, 88,277 square meters of dwelling space, kindergartens to accomodate 420, clubs to accomodate 1,500 spectators and many other cultural-domestic and production facilities. Significant successes were achieved by industry, automotive transportation and trade.

Since the beginning of the five-year plan, specialized rice growing sovkhozes have produced 591,000 tons of rice, of which 490,000 tons were sold to the state. The average productivity amounted to 44.3 quintals of unhusked rice per hectaare. The homeland also received a good deal of meat, milk, vegetables, fruits and other agricultural products.

In the exceedingly busy year of 1978 collectives of Karakalpakirsovkhozstroy assimilated 53,639,000 rubles' worth of capital investments, performed 46,381,000 rubles' worth of contracted construction and installation work, introduced 8,519 hectares of new land into agricultural circulation, and constructed and put into operation about 33,000 square meters of dwelling space and many other facilities.

Almost all of the administration's mobile mechanized columns fulfilled or overfulfilled the general plan for contracting work, and they did it with their own forces.

Our rice growers worked heroically last year. Under difficult climatic conditions they raised a large crop of grain and produced 223,000 tons of rice or 22,000 tons more than was envisioned by the national economic plan. They sold the state 187,000 tons of grain or 24,000 tons more than called for by the planned assignments. During the year rice production increased by 40,000 tons and 42,000 tons more of it were sold to the state. The proportion of rice produced last year on virgin land in Karakalpakiya reached 12.5 percent of the unionwide figure and 60 percent of the level for all of Uzbekistan.

All 14 rice growing farms made a large contribution to this labor success. Appreciable results were achieved by the sovkhozes imeni Chapayev, imeni 50-letiye VLKSM, and Madaniyat, and by the autonomously financed brigades of Hero of Socialist Labor Ubbiniyaz Bekniyaz, Sarsenbay Kurbanbayev, Uteniyaz Turymbetov and the collectives of the brigades headed by Abadan Sarsenbayev, Ten Yen Khvan, Gul'bazar Khozhagel'diyev and many others who fulfilled not only the plan, but also increased socialist commitments, and obtained 60-70 quintals of rice from each hectare. These collectives also successfully carried out the assignments for 3 years of the five-year plan.

Thanks to the self-sacrificing labor of the assimilators of virgin land and of the rice growers, the collective of the territorial administration of Karakalpakirsovkhozstroy will be the winner of the all-union socialist competition for the third year in a row and, from the results of 1977 and 1978, it was awarded the Challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the AUCCTU and the Komsomol Central Committee, and this was noted on the Board of Honor of the Exhibition of the Achievements of the National Economy of the USSR.

Specialized rice growing farms receive new technical equipment each year, mineral fertilizers and chemical means of plant protection are applied to the virgin rice land in ever increasing amounts; and more and more money is being spent on large-scale construction of modern rice systems, irrigation and land reclamation structures and collector networks. Progressive methods, based on the achievements and experience of advanced workers, are being introduced into production more decisively now. This contributes to advancing the science of farming and increasing productivity and gross yields of raw rice, and it also improves the quality and labor productivity at production and cultural-domestic facilities that are under construction.

Responding with actions to the paternal concern of the party and government, rice growers of the administration have made the commitment to produce 245,000 tons of rice in the fourth year of the Tenth Five-Year Plan while the plan was for 223,000 tons, and to increase productivity to 50 quintals from each of 55,500 hectares.

Such rates will make it possible to produce no less than 300,000-320,000 tons of rice on an area of 64,000 hectares by the end of the five-year plan and to obtain up to a million tons of rice grain a year in Karakalpakiya by 1990. Keeping this growth in mind, we shall have to assimilate more than a billion rubles' worth of capital investments and to increase the overall area planted in rice to 220,000 hectares or, taking into account the 71,000 hectares that have already been introduced, to assimilate and introduce into agricultural circulation an additional 149,000 hectares of new land and construct more than 500,000 square meters of dwelling space and many other facilities that contribute to improving life in the country.

By that time there will be 35 specialized rice growing sovkhozes in operation in the autonomous republic. They will be located in five rice growing regions.

As you can see, the plans are great. The workers who will assimilate the virgin land and the rice growers will have a great deal to do in order to implement them. Above all, it is necessary to solve the problem of water supply. According to the scheme for comprehensive utilization of water resources of the Amu-Dar'ya which was developed by the Central Asian Division of the Gidroproyekt Institute, there will be a guarantee that the Kara-Kalpak ASSR will be provided with 400,000 hectares of irrigated land, including about 164,000 hectares for rice growing. From this area, based on a 50-quintal yield, it will be possible to produce about 870,000 tons of rice grain. It will be necessary to make up for 130,000 tons of rice through mass assimilation of land and economical expenditure of water within the limits of 12-15 percent. A number of measures are now being developed for accomplishing this. In particular, it is planned to construct two faced main canals and to introduce meters for keeping track of water utilization at water distribution facilities. Experiments are also being conducted with closed drainage, following the experience of Golodnostepstroy in the Takhtakupyrskiy massif.

The rapid growth of rice production also depends on efficient operation of the machine and tractor fleet and on its repair base. At the present time each sovkhoz has introduced a machine and tractor shop with a capacity of up to 300 conventional repair jobs a year. But it is not possible or efficient to carry out all kinds of repair in one's own shop, especially capital repair. On each rice growing farm there are more than 40 makes of tractors and agricultural machines which require complicated capital repair at specialized repair plants that have modern equipment. At the present time capital repair of individual makes of tractors is done at plants of Tashkent, Karshi and other cities of Uzbekistan, but this method of repair creates great organizational difficulties and excessive expenditures. With a further increase in the number of tranctors and other agriculural machines there is a need to create a large mechanics shop in Nukus, which would be able to do capital repair of technical equipment not only from rice growing sovkhozes, but also from construction organizations where there are almost as many tractors as there are on rice growing farms.

Strengthening the repair base will make it possible to increase the productivity of the machine and tractor fleet by 15-20 percent and to reduce expenditures on repair at remote enterprises by a large sum.

With further specialization of rice growing in Takhtakupyrskiy, Karauzyakskiy, Kenesskiy, Kungradskiy and Leninabadskiy rayons, many new rice growing sovkhozes will be constructed on their territories. In order to construct residential buildings and other facilities, it will be necessary to have millions of fired bricks and many other construction materials. Karakalpakiya is now experiencing a shortage of bricks. Construction workers have a great demand for them. Therefore it is now necessary for the autonomous republic to have its own brick plants at the disposal of the rice complex.

The Karakalpakirsovkhozstroy has submitted a petition to Glavredazirsovkhozstroy for the construction of a brick plant with a capacity of 25 million bricks a year in Karayzakskiy Rayon. It is necessary to accelerate the construction of the house building combine with a capacity of 90,000 square meters of dwelling space a year in the city of Takhiatash.

A great impediment to the further increase in rice production and its productivity is the water shortage which is becoming increasingly critical in Karakalpakiya, as a result of which many farms could not plant crops within the established time periods. Because of this the crops on a large part of the area do not ripen, which leads to losses of grain in amounts of 15-20% of the overall rice harvest.

Rice is a moisture loving crop. For each 1 hectare planted in rice, depending on soil and hydrogeological conditions, one needs from 28,000 to 32,000 cubic meters of water, in the first year of assimilation--30,000-40,000 cubic meters, or 4-5 times the amount needed for cotton and other dry land crops. Therefore it is expedient to construct temporary intersovkhoz water reservoirs, from which one can take water for irrigation during especially difficult years with little precipitation. The republic is now already planning the construction of the Atakul'skiy, Mashankul'skiy and Yesbergenshigannakskiy water reservoirs.

During the period of water shortage one can use thrown-off water repeatedly for irrigation. Water that has been thrown off from rice fields is distinguished by less mineralization and an appreciable current which makes it possible to utilize it repeatedly for irrigating the rice itself as well as other dry land agricultural crops. Additionally, in water reservoirs and collector canals one can propagate fish which can be used by virgin land workers.

Here in Karakalpakiya many rice growing farms have already used collector-drainage water for irrigating rice for many years. Thus, for example, the Karayzyak sovkhoz pumps water from the Kostamgaly collector into the Yesim canal, from where it goes on to the fields. The water is considered quite suitable for irrigation when the salt content does not exceed 0.1-0.15% or 1.175 grams per 1 liter.

But at the present time collector water is not used enough for irrigation of agricultural crops. Many people forget that this is an important reserve in sovkhoz production which is of great national economic significance.

Guided by the decisions of the July and November (1978) plenums of the CPSU Central Committee and the program speeches of General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev, the collective of many thousands of Karakalpakirsovkhozstroy administration, as usual, will persistently follow the general party line for further development of rice growing in the lowlands of the Amu-Dar'ya, which is the most favorable area for the cultivation of this crop in Central Asia. It should be noted that the northern zone of Karakalpakiya does not fully meet the requirements of highly intensive cotton growing and that rice growing produces the greatest economic effect here both in terms of return on expenditures and in terms of the final result which is expressed in the volume of production of this important food crop.

A solution to the question in favor of specialization of the northern zone in rice growing will contribute to the growth of the economy and the well-being of the workers of the autonomous republic. Incomes will increase from the production of rice and other agricultural crops and the coefficient of land utilization will increase greatly. There will be a marked increase in the material incentives for agricultural workers. Even now the city dweller is willing to go to rice growing farms where there are good earnings and a well-arranged apartment with all conveniences, a kindergarten, a school and a hospital.

Even now each hectare of land planted in rice produces 1,500 rubles in income for the economy. This is three times the amount that is produced by each hectare planted in cotton. So there is every reason to transform the northern zone of Karalpakiya into a large rice bin not only for Central Asia, but also for the entire country.

COPYRIGHT: "Sel'skove Khozyaystvo Uzbekistana", 1979

11772
CSO: 1824

PROTEIN CONCENTRATE DERIVED FROM GRASS

Moscow SEL'SKAYA ZHIZN' in Russian 15 Dec 79 p 2

[Article by Yu. Novikov, director of the Central Scientific Research Institute of Mechanization and Electrification of the Livestock Industry in the Southern Zone of the USSR, corresponding member of the All-Union Academy of Agricultural Sciences imeni Lenin, Zaporozh'ye]

[Text] Our outstanding scientist in the field of feed production, Prof A. A. Zubrilin and his disciples are to be largely credited for the idea of producing feed protein from grass. At one time, production of food and therapeutic products, including a protein and vitamin product derived from plants, presently known under the name of green protein concentrate (PZK), had even been organized in our country.

At the present time, there are about 10 major industrial enterprises in the world that produce this concentrate. They include the Hungarian plant, Vepex; the French joint-stock company France Lucerne; the English firm, Unillver, and others. Like our specialists, foreign scientists voice the firm conviction, on the basis of comprehensive research and experience, that the technology of protein production from grass will become one of the main ones in feed production.

What are the distinctions of this technology? The green mass of perennial and annual grasses, most often protein-rich alfalfa, as well as rape, feed cabbage, diverse haulm and other waste from field-crop cultivation, depending on the adopted conveyer of raw material, is cut down by feed-harvesting combines and transported to the plant. There it is ground and pressed. The fibrous part (grass pulp) is processed into meal [flour], used as feed in fresh form or stored for hay. The green juice from the presses undergoes the coagulation operation (by heating to 82 degrees). The protein sediment-coagulant is isolated in the form of "green cottage cheese" on filter presses or centrifuges, and the liquid part, the "brown juice," is used as a nutrient medium to produce yeast protein. The "cottage cheese" is most often dried on a spray drier and ultimately converted into dry meal, a cellulose-free concentrate containing 40 to 60% crude protein.

The amino acid composition of such a concentrate is virtually equivalent in quality to the proteins in meat, eggs and milk. Expressly this makes it an excellent feed protein supplement, replacing at least 50% of any proteins of animal origin.

Tests have shown that, in spite of impoverishment of grass pulp in the recovery of PZK, its feed value is virtually unharmed. The protein content in the pulp is at least 165-180 g/feed unit, and this is quite adequate for cattle. In the second place, because the fibers in pulp are more segregated and the pulp is "softened" after being pressed, it is better assimilated than the original grass. But even if the protein content of pulp would be below the norm, the level thereof for ruminants can be readily supplemented by nonprotein nitrogen.

The importance of resolving the protein problem to develop the nation's livestock industry is common knowledge. Annually, this industry must receive 36-38 million tons of digestible protein. The absolute shortage thereof is over 8 million tons. Moreover, there is also the so-called "concealed" shortage, due to the deficiency in feed of lysine, methionine and other essential amino acids. Even with the most cautious estimate, the consequences of an absolute and concealed protein shortage turn into an enormous shortfall of livestock production. The nonproductive outlay of feed increases then by 1.5 or more times. So that the production of PSK may become an important source of complete protein, and one of the chief means of saving concentrates and other types of feed.

As we know, sown grass yields the maximum protein per hectare. Reports of the results of Soviet and foreign studies indicate that the protein yield per hectare of alfalfa in the central and southern climate zones exceeds the "protein harvest" of corn, barley and other fodder crops by 3-5 times.

Grasses and, in general, green plants are the richest sources of protein. However, the existing technologies for processing feed from grass does not yet permit either complete retention of the entire biological yield of protein or improvement of its quality. As we know, the loss of nutrients during grass processing is still very high, reaching 15-30%. With the use of high-temperature drying, there are irreversible changes in a significant part of the lysine, xanthophyll, carotene, vitamin E and a number of other substances. Also, the need for large amounts of fuel (110-130 kg per ton green mass with moisture content of 68-77%) is a substantial flaw of this technology.

At the same time, experience has shown that, in the southern part of the Ukraine, in irrigated fields, one can obtain 21 centners of PZK containing 10 centners of digestible protein from a harvest of 700 centners of green alfalfa mass per hectare. To obtain the same amount of protein from corn, one has to gather almost 140 centners, from oats about 130 centners, from barley 135 and from soybeans 36 centners. Yet, in addition to PZK, the same hectare of alfalfa will yield about 140 centners of grass meal, which contains over 15 centners more of digestible protein.

If we consider all these factors, it leads to the conclusion that, with the new technology based on moist separation, one can obtain 1,7-2 times more protein in the form of livestock production per hectare of land planted with irrigated alfalfa than by the existing traditional methods. This means that the effectiveness of this technology for continued development of the livestock industry is very high.

What can be said about introduction of this technology?

The inherent distinction of the method is the wide use of "nonagricultural" machinery and equipment, produced mainly by the machine building enterprises of the ministries of the chemical and food industries. The technological processes involved in PZK production are equally "atypical." They require that serious biochemical and microbiological studies be pursued. On the biochemical level, there must be automatic monitoring of the course of production and quality of the concentrate. Some very serious problems arise when designing the raw material conveyer at PZK plants for different regions of our country.

In a word, this involves quite a bit of work for biochemists, microbiologists, mechanical engineers, "heat" specialists, electricians, breeders, agronomers and agrochemists. Let us mention, for example, the problem of developing alfalfa varieties with low saponin content. This is very important for moist separation, since the presence of saponin-like substances in PZK lowers drastically the quality of the product, or else requires serious complication of production. Equally important are questions of feed, let alone alimentary, utilization of the concentrate.

It is quite obvious that the efforts applied by small teams of enthusiasts at our institute and several other research institutions are utterly inadequate for the solution of the problems set forth. We need a long-term program of complex research, cooperation of scientific manpower and institutions, special-purpose financing of research and activities related to introduction to practice.

Our institute, which is the chief one by decision of the presidium of the All-Union Academy of Agricultural Sciences imeni Lenin for work on this problem, developed such a program a year ago. In the past few years, we have repeatedly addressed ourselves to the USSR State Committee for Science and Technology with proposals to develop an interagency coordinated plan on the problem of "green protein"; we raised the question of additional financing of the work. But, they either prefer to remain silent at the State Committee, or else they avoid giving answers by organizing all sorts of temporary commissions and preparing informative reports.

The opening of a small problem laboratory under the Rostov Institute of Agricultural Machine Building, which did some work in the area of technology of "green protein," but which by virtue of its position at the VUZ could not develop it on a broad enough scale, serves as the decisive argument for the pro forma letters ["otpiski"]. In 1979-1981, there were plans to build the first Soviet PZK plants in Belorussia and Moldavia following the designs of our institute, as well as to complete construction of experimental installations to refine the technology of PZK in an experimental plant.

Incidentally, the plans of the USSR Ministry of Agricultural Construction for 1978 and 1979 included allocation of 100,000 rubles for the construction of experimental installations. However, Zaporozhsel'stroy [Zaporozh'ye Committee for Rural Construction] of the Ukrainian Ministry of Rural Construction is not undertaking this project for the time being. As a result, some unique and expensive equipment and PZK production lines at the experimental farm [plant] of the institute have remained under the open sky for 2 years already. For the third year, the contractor is also refusing to build the special experimental building ["pavilion"], in which there are plans to conduct tests of PZK on animals.

The first Soviet PZK plants are being partially equipped with nonstandard equipment, which has to be manufactured by our institute's experimental plant. "Zaporozhtreststroy" [Zaporozh'ye Committee of the Construction Trust] of the Ukrainian Ministry of Heavy Machine Building should have delivered it for a start up at the end of 1978. Yet, we do not have any guarantees that this will happen even in 1980.

We should like to remind the organizations involved in implementing construction of scientific and experimental projects of the decree issued by the CC CPSU and USSR Council of Ministers: "on measures to improve the effectiveness [efficiency] of work of scientific organizations and expedite the use of the achievements of science and technology in the national economy." In view of the need for development, ahead of schedule, of science, it indicates that the Party and government have made it incumbent upon the nation's ministries and agencies, councils of ministers of Union republics to give priority to the requirements of scientific organization when considering questions of material and technical supply, and capital construction.

Unfortunately, in practice this does not happen in all cases by far. The attitude toward the problem of producing "green protein" is a typical example.

10,652
CSO: 1824

FEED-CROP CHOICES FOR IRRIGATED LAND

Moscow SEL'SKOYE KHOZYAYSTVO ROSSII in Russian No 11, Nov 79 pp 53-55

[Article by M. Khudenko, candidate of agricultural sciences, and N. [illegible], junior scientific coworker: "Which Feed Crops Should Be Grown on Irrigated Land?"]

[Text] Irrigated land yields the greatest results in forming a reliable feed base for livestock. The data of science and advanced practice show that it is possible to harvest four to five times more feed on a hectare of irrigated land than on unirrigated land. In doing so, an important role is played by perennial grasses, winter crops and summer, pulse-cereal mixtures. After harvesting winter and early summer crops for green chop, there remain sufficient reserves of warmth for producing a full-valued crop from second sowings. Corn and Sudan grass, both in pure and mixed sowings, yield large harvests of green mass at different times. The problem is to select the most productive feed crops, taking into account their productivity, nutritive value, length of time to reach maturity as a feed and their economic effectiveness. From this point of view, special attention should be given to alfalfa, which is used both for green chop as well as for hay and protein-vitamin meal. In the Saratovskoye Zavolzh'ye it is the primary crop in the raw material line grown on irrigated land. Every year the leading farms mow from 500 to 700 quintals of green mass per hectare. In our 3-year experiments, the alfalfa harvest averaged 600 quintals.

Mowing alfalfa at the optimum times (at budding and at the beginning of blooming) permits the farms to make four mowings during the following calendar periods: the first mowing--10 to 20 May, the second--20 to 30 June, the third--1 to 10 August and the fourth--10 to 20 September.

In the dry, semiarid land of the Algayskiy zone of Saratovskaya Oblast, the leading units of the sovkhoz, the Kamyshkovskiy and the Aleksandrovskiy, harvest 400 to 500 quintals of green mass; and in 1978 in Novouzenskiy Rayon of the same area, 400 were obtained, or 75 quintals of feed units from each of 12,000 hectares.

The highest level of alfalfa's productivity is reached during its third and fourth years. Disking the alfalfa to a depth of 35 to 40 centimeters before irrigation is of decisive importance in improving soil aeration and its water permeability. Research on the Experimental Model Farm "Solyanskoye" in

Pugachevskiy Rayon has confirmed the high level of effectiveness of this land improvement method. The water permeability of soil in disked fields is improved to 0.8 to 0.9 mm per minute as compared with 0.4 to 0.5 mm without disking. With the increase in water permeability, the depth to which the soil is thoroughly soaked is increased to 0.8 to 1 meter, and at a rate of 500 cubic meters of water per hectare, there is no run-off beyond the limits of the field. Without disking, water run-off already occurs when the rate is higher than 300 cubic meters her hectare. This method improves the water and air characteristics of the soil, which results in an improvement in the irrigation rate of 130 to 180 cubic meters, and this permits an increase in the alfalfa harvest of 35 to 40 percent. If without disking a hectare yielded 600 quintals of green mass, then with disking after the first mowing or at the beginning of spring sprouting it will yield 761 quintals.

Taking into account the high productivity and nutritive value of alfalfa, as well as the great agricultural engineering and land improvement significance, it should comprise not less than 40 to 50 percent of the fields sown with feed crops. This proportion of alfalfa has already been achieved on the leading farms of the area on irrigated fields.

During the spring period winter crops are utilized along with alfalfa for green chop, namely, rye, wheat and amphidiploid Awnless 2, the productivity of which during the years of our observations averaged respectively 240 quintals (3.7 quintals of protein), 226 (5.5) and 336 (8.3) per hectare.

After harvesting winter crops for green chop, there remain 110 to 120 days with a total temperature of more than 2000 degrees which permit a full-valued harvest of such highly productive crops as corn, Sudan grass, sorghum-Sudan hybrid and mixtures of them (Table 1).

Table 1

Experimental Variant	Yield, quintals per hectare			
	Green Chop	Dry Material	Feed Unit	Digestible Protein
Corn	464	68.0	64.9	6.5
Corn + Sudan grass	540	104.6	95.4	11.0
Sudan grass	379	76.9	82.8	9.6
Sorghum-Sudan hybrid	419	71.8	80.3	8.3

The mixture of corn with Sudan grass is the most productive in the mowed sowing. Its yield amounted to 540 quintals, which, included in the harvest of green chop from winter crops, yields 876 quintals of feed per hectare. In this combination the sovkhoz "Engel'skiy" in the Saratovskaya Oblast harvests approximately 700 quintals of green chop yearly from each of 150,000 to 200,000 hectares.

Summer, pulse-cereal mixtures, corn and Sudan grass were studied for producing green chop during the early and late summer periods. From Table 2 it is evident, that the greatest productivity is a result of the pea-fescue mix with subsequent sowing of mowed corn.

Table 2

	Yield, quintals per hectare				
	Green Fodder		Dry Material	Feed Units	Digestible Protein
	Total	Leguminous-Cereal mixture			
Vetch-fescue mixture + corn	759	299	106.5	117.0	16.8
Pea-fescue mixture + corn	807	348	117.3	127.3	15.0
Vetchling-fescue mixture + corn	754	294	114.4	117.5	14.2
Pea-sunflower mixture + corn	883	423	112.4	132.8	13.2

Moreover, mixed sowings of Sudan grass with pulse-cereal mixtures are worthy of attention (Table 3).

Table 3

Experimental Variant	Yield, quintals per hectare			
	Green Feed	Dry Material	Feed Units	Digestible Protein
Vetch-fescue mixture + Sudan grass	593	105.3	111.0	16.7
Vetch-sunflower mixture + Sudan grass	780	140.6	131.6	18.0
Sunflower-sudan mixture	691	139.7	126.0	14.3
Corn-sudan mixture	[illegible]	134.8	151.4	18.0
Sudan grass	639	126.3	138.3	17.0
Sorghum-Sudan hybrid	712	133.5	161.9	12.8

After the primary mowing of these mixtures, Sudan grass still yields a full-valued harvest of aftermath. This makes it possible to obtain feed by means of early, summer vetch-fescue mixtures at the beginning of summer when the winter crops and the first mowing of the perennial grasses have already been utilized and the late summer crops have not yet reached mowing maturity. Taking this characteristic into account, the vetch-fescue mixture with Sudan grass should be included in the green line system, which will provide for uninterrupted supplies of green chop.

The Sunflower, vetch and Sudan-grass mixture is extremely valuable. It is necessary to include it in the raw material line for the production of hay and silage at an early time, which will make it possible to extend the optimum period of ensilage and to load a part of the silage before harvesting the cereal and primary silage crops, corn, as well as to systematically utilize the harvest machinery and transport equipment. On the kolkhoz imeni Il'ich in Krasnopartizanskiy Rayon, the kolkhoz "Progress" in Marksovskiy Rayon and on the "Engel'sskiy " sovkhoz 500 to 700 quintals of silage from these crops on an area of 200 to 300 hectares are being stored.

We investigated various crops and their mixtures for green chop in late summer and fall periods and for silage. The highest results were provided by the corn hybrid Krasnodarskiy 309 and sorghum (Table 4).

Table 4

Experimental Variant	Yield, quintals per hectare			
	Green Chop	Dry Material	Feed Units	Digestible Protein
Corn hybrids:				
VIR-42	530	131.8	100.7	7.0
VIR-156	633	132.9	124.3	8.0
Krasnodarskiy 303	618	138.2	117.5	8.1
Krasnodarskiy 309	656	158.6	126.4	8.2
Sorghum	581	132.5	133.7	9.9
Corn + sorghum	572	125.9	117.3	7.9
Corn + sunflower	597	115.2	99.1	7.6
Sunflower	576	98.3	67.6	7.7

The after-harvest sowings are an important source of green chop in the late summer period. The possibility of their cultivation is determined by the length of the frostless period after harvesting the primary crop. According to the data of many years, this period in different areas of the Saratovskaya Oblast' amounts to 80 to 90 days with a total warmth of 1,300 to 1,600 degrees, which is sufficient for feed maturity of such crops as corn, Sudan grass, sunflower, oats, peas and others. Pulse-cereal mixtures are particularly valuable in repeated sowings.

In our experiments on green chop during the fall period, we cultivated crops which are resistant to early frosts, namely, oats, vetch-fescue mixture and the same mixture with the addition of winter rye. We sowed them at the end of July. Cultivation was limited to the application of fertilizer on the basis of $N_{60}P_{60}$, plowing to a depth of 18 to 20 centimeters, presowing cultivation and sowing. The amount of seed was the following: oats--6 million, vetch--2 million and rye--3 to 5 million germinating seeds per hectare. The amount of the mixture was 50 to 60 percent of the full amount for rye in a pure form. During the years of the research, the yield of green mass from oats amounted to 180 quintals per hectare and 200 quintals of the vetch-fescue mixture with winter rye. The after-harvest crops were harvested from

20 September through 10 October, and the winter rye began the winter in a well developed state and in the spring provided the earliest green chop. Its harvest yield per hectare amounted to 220 to 240 quintals.

On the kolkhozes "Progress" and imeni "22nd Party Congress" in Markovskiy Rayon and on the sovkhoz "Engel'sskiy," 150 to 175 quintals of green mass per hectare are harvested from after-harvest sowings.

In organizing the green conveyor it is necessary to ensure that it fully supplies all the livestock with feed during the summer and makes it possible to prepare the necessary amount of hay, silage and grass meal and pellets for the winter period. The leading farms are achieving this by employing the following crops: perennial grasses, winter rye and wheat, early summer crops such as barley, oats, peas, vetch, sunflower and others in mixtures, multi-component cereal and pulse mixtures in cultivated pastures, late summer crops such as corn, Sudan grass, sorghum and soybeans both in pure and mixed sowings, and succulent crops such as beets, squash, pumpkins and feed cabbage.

Considerable experience in the organization of the green conveyor has been acquired on the sovkhoz "Engel'sskiy." Here they have investigated the growth and development characteristics of feed crops and the dynamics of crop storage and have determined the optimum periods for sowing and utilizing the grasses. On this basis they have established a sowing calendar for feed crops and a calendar for supplying green chop grown on irrigated land (Table 5).

Table 5

Type of Crop	Time period			Yield, quintals per hectare
	Sowing	Utilization		
		Start	Finish	
Winter rye	Fall	15/V	20/V	160-180
Winter wheat	Fall	20/V	10/VI	180-200
Alfalfa of past years:				
1st mowing		25/V	10/VI	220
2d mowing		1/VII	20/VII	200
3d mowing		10/VIII	20/VIII	160
4th mowing		10/IX	20/IX	140
Multi-component mixture with barley	20/IV	10/VI	20/VI	200
Multi-component mixture with oats	20/IV	20/VI	30/VI	180
Corn with Sudan grass	10/V	1/VII	20/VII	400
Mown corn with Sudan grass after winter rye	30/V	20/VII	10/VIII	150
Mown corn with Sudan grass after winter wheat	5/VI	30/VIII	10/IX	150
Corn from spring sowing	5-10/V	20/VIII	30/VIII	500
Vetch-fescue mixture, mown oats after multi-component mixtures and sown after winter grain crops	20-30/VII	20/IX	20/X	125

In order to provide cattle with green chop from spring through fall, 43.7 hectares per 100 head are allocated to the primary sowing of feed crops and 44 hectares for secondary sowing (after winter crops for green fodder and grain). Knowing the herd population and the planned harvest yield, the sown area for each crop and the seed requirements are determined and the methods of cultivation are worked out.

Of course, feed crops grown on irrigated land must meet the main requirement of providing the maximum output of feed units which are balanced in protein and must provide an uninterrupted supply of feed during the pasture period. In connection with this, the following structure of feed-crop sowing (in percent) will be the most efficient: perennial grasses--40 to 50 percent, pulse-cereal mixtures of annual grasses in primary and secondary sowings (vetch with oats + Sudan grass, sunflower + peas, sunflower + vetch + Sudan grass)--15 to 20 percent, silage crops (sunflower + Sudan grass + vetch, sunflower + Sudan grass, corn + sunflower, corn + soybeans)--25 to 30 percent and root crops--5 to 10 percent. It is precisely the correct selection of highly productive feed crops which makes it possible to achieve high harvest yields of green mass on irrigated land.

COPYRIGHT: 'Sel'skoye khozyaystvo Rossii," 1979

11220
CSO: 1824

CENTRAL ASIAN JOURNAL URGES ORGANIZED, EFFICIENT LOCAL FEEDCROP EFFORT

[Editorial Report] Taskkent SEL'SKOYE KHOZYAYSTVO UZBEKISTANA in Russian No 12, Dec 79 pp 31-33 in the December issue of an agricultural journal from Uzbekistan is a 1400 word article by Tadzhikistan agronomist N. Parishkura urging Uzbekistan's feed crop growers to take note of Tadzhikistan's experiments in livestock feed crop production. The problem of having to schedule feed crops around the cotton crop had already been broached in Sh. Khallyyev's article from Ashkhabad in SEL'SKOYE KHOZYAYSTVO TURKMENISTANA No 9, Sep 79. Parishkura brings the problem up again, notes cotton and feed crop losses resulting from improper scheduling and pointing out that proper scheduling would allow year round utilization of the crop land.

The article then turns to specific crop and variety recommendations, with emphasis on those cereal and pulse crops which ripen quickly [skorospelyy, ul'traskorospelyy] and are well adapted to the conditions of southern Central Asia.

The first two varieties mentioned are natural hybrids of Sudan Grass and Johnson Grass, developed from original samples imported from Uruguay. Shabdar and Berseem Clover are stressed as is Perko, a hybrid of winter rape and Chinese Cabbage imported from Bulgaria into Tadzhikistan in 1978.

COPYRIGHT: "Sel'skoye khozyaystvo Uzbekistana", 1979

CSO: 1824

BRIEFS

USE OF LOCAL FEED--Frunze SEL'SKOYE KHOZYAYSTVO KIRGIZII in Russian No 12, 12 Dec 79 p 39, in a short article published in an agricultural journal in Kirgizstan urges livestock men in Kirgizstan to consider utilizing the locally available and well adapted "betege" as a feed grass. Betege (Festuca sulcata) is in use elsewhere under its more widely known Russian names "Tipchak" and "Ovsyanitsa Borozdchataya." [Editorial Report] In Ashkhad SEL'SKOYE KHOZYAYSTVO TURKMENISTANA in Russian No 9, Sep 79 pp 12-13 published in another short article, this one in an agricultural journal published in Turkmenistan, discusses the annual survey of alfalfa lands in Turkmenistan and points out alfalfa's value as a predecessor crop for cotton and as a valuable feed crop. However several rayons do not appreciate the value of alfalfa and are taken to task for having not properly maintained their alfalfa lands and then permitting exaggerated figures for their alfalfa hectarage to be entered in the records. Leaders and specialists in these areas are called upon to devote serious attention to correcting this situation. [Editorial Report]

CAREFUL FEED USE IN VOLGOGRADSKAYA--Moscow PRAVDA in Russian 15 Jan 80 p 1 contains a mid-January article that notes wintering of livestock in Volgogradskaya Oblast is going forth under difficult circumstances. Enterprises are not fully supplied with livestock feed. Yet those farms which take the trouble to use their forage carefully are attaining good results. [Editorial Report]

SAXAUL TO UPGRADE PASTURES--Moscow SEL'SKAYA ZHIZN' in Russian 10 Jan 80 p 2 reports that new saxaul groves are allowing Kazakhstan shepherds to graze two sheep on natural grass which not so long ago would have sufficed for only one. The productivity of pasture lands under the protection of the wonderfully drought resistant tree increase significantly. In addition the young saxaul shoots make high calory feed for cattle. Pastures in the Muyun-Kum, southern Lake Balkhash area, eastern Aral and northern Caspian Sea area have been thus upgraded. The area on which saxaul has been planted in Kazakhstan exceeds 700,000 hectares. This is at least the fourth occasion on which the emphasis has been on making the most of the local environment and resources to support Central Asian livestock programs. [Editorial Report]

CSO: 1824

END

END OF
FICHE
DATE FILMED

13 FEB

N.P.M. 80